

data platform to collect, share, and analyze near real-time COVID-19 data, to assess its contribution to the agency's situational awareness.<sup>232</sup>

Emergency medical supplies such as PPE can be stored in a variety of locations, including stockpiles maintained by health agencies or medical supply caches held by hospitals or other health care organizations. In addition, the supplies may be used in a variety of contexts—by health care workers, responders, or citizens. As a part of HPP, ASPR requires grantees to track supply inventories and document strategies for maintaining stockpiles and medical supply caches, but does not require reporting of stockpile contents to ASPR.<sup>233</sup> Congress may consider how to facilitate improved automated reporting on nonfederal PPE supplies, including nonfederal stockpiles and medical caches, to include information such as PPE expiration and usage rates. Frequently updated data could enable HHS, FEMA, and/or DOD to establish ongoing visibility across federal, state, tribal, and territorial, and health care provider PPE supplies.<sup>234</sup>

Federal monitoring of PPE supply across the country may enable HHS, FEMA, and/or DOD authorities to (1) monitor and analyze nationwide PPE levels, expiration, and usage rates; (2) identify and help to remedy PPE supply vulnerabilities at the nonfederal level prior to supply shocks; (3) strategically acquire PPE as a redundancy measure if supply chains are overwhelmed; and (4) strategically deploy federal PPE assets during periods of competing demand.

However, health-related data collection presents a distinctive challenge for supply chain visibility. Generally, implementing any data collection system for health-related data has historically been challenging—health care organizations and health departments have different IT, data collection, and record management systems. These system-level issues have affected efforts to improve federal health data collection efforts, such as the prior HHS situational awareness efforts.<sup>235</sup> During the COVID-19 pandemic, HHS established a new data collection system through a vendor, TeleTracking, to help monitor daily medical supply utilization at hospitals.<sup>236</sup> Some observers have criticized this system, particularly about the reporting burden on hospitals,<sup>237</sup> abrupt data collection requests, and inadequate consultation from hospitals and health experts during system design.<sup>238</sup> Additionally, some Members of Congress have requested that GAO

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<sup>232</sup> GAO, *COVID-19: Federal Efforts*, pp. 97-100.

<sup>233</sup> Correspondence with ASPR, August 12, 2020.

<sup>234</sup> Anita Patel et al., "Personal Protective Equipment Supply Chain: Lessons Learned from Recent Public Health Emergency Responses," *Health Security*, vol. 15, no. 2 (June 2017), pp. 244-252. FEMA recently exercised Defense Production Act authorities to establish a voluntary agreement through which PPE suppliers would provide supply data and increase supply chain visibility. FEMA, Homeland Security (DHS), "Voluntary Agreement Under Section 708 of the Defense Production Act; Manufacture and Distribution of Critical Healthcare Resources Necessary to Respond to a Pandemic," 85 *Federal Register* 50035, August 17, 2020.

<sup>235</sup> GAO, *Public Health Information Technology: HHS Has Made Little Progress Toward Implementing Enhanced Situational Awareness Network Capabilities*, GAO-17-377, September 2017, p. 24, at <https://www.gao.gov/assets/690/686971.pdf>.

<sup>236</sup> HHS, "Prepared Remarks from HHS Media Call with CDC Director Redfield and CIO Arrieta on COVID-19 Data Collection," July 15, 2020, at <https://www.hhs.gov/about/news/2020/07/15/prepared-remarks-from-hhs-media-call-cdc-director-redfield-cio-arrieta-covid-19-data-collection.html>.

<sup>237</sup> Amy Goldstein and Lena H. Sun, "Hospital Officials, Experts Say New Federal Rules for Covid-19 Reporting Will Add Burdens During Pandemic," *Washington Post*, July 15, 2020.

<sup>238</sup> Robbie Whelan, "Covid-19 Data Reporting System Gets Off to Rocky Start," *Wall Street Journal*, August 11, 2020; and Nicholas Florko and Eric Boodman, "How HHS's New Hospital Data Reporting System Will Actually Affect the U.S. Covid-19 Response," *STAT*, July 16, 2020.

review the new reporting requirements.<sup>239</sup> Congress may also consider how to ensure that such a system is useful to all interested parties, including state and local jurisdictions.

Congress may also consider integrating PPE stockpiling into existing risk and resiliency assessments. For example, Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act requires states, tribes, and territories to submit disaster mitigation plans to FEMA that includes identifying risks and countermeasures. Congress may also consider requiring states, tribes, and territories to incorporate PPE stock and use strategies in these plans as a means to address potential PPE supply issues.<sup>240</sup>

## DOD: Policy Options

As mentioned, the Trump Administration used the DOD acquisition system to provide surge support to the HHS and FEMA acquisition corps. DOD officials have highlighted the benefits offered by such support—both in avoidance of duplication of “capabilities at scale around the government” as well as in “sharing” the expertise of the DOD acquisition workforce to assist with the interagency response to a domestic emergency.

However, employing the DOD’s acquisition workforce and authorities to respond to a domestic emergency requires DOD to balance equities related to near- and far-term defense needs, including defense and national security goals, with broader national and public policy goals associated with responding to homeland considerations. Sub-optimal tradeoffs between those competing missions could result in DOD pursuing practices that increase costs, slow the acquisition process, and produce suboptimal capabilities for its primary customers in DOD’s operational forces.

Congress could consider the potential for unintended consequences associated with using DOD’s unique acquisition authorities to provide surge support to the HHS and FEMA acquisition corps.<sup>241</sup> For example, 10 U.S.C. §2371b, which establishes DOD’s *other transaction authority* (OTA) for prototype projects, states that the authority is to provide a means of “enhancing the mission effectiveness of military personnel and the supporting platforms, systems, components, or materials proposed to be acquired or developed by the Department of Defense.”<sup>242</sup> The statutory language establishing this authority does not address its use—either by DOD or by other federal agencies—to respond to national health emergencies or other domestic crises. The use of this and similar authorities to provide assisted acquisitions may contribute to DOD’s emergence as an emergency acquisitions auxiliary for the federal government as a whole, which may conflict with long-standing norms and practices to segregate warfighting and civil defense functions in government, and potentially interfere with DOD’s conventional focus on foreign external threats.

DOD officials have also discussed a potential disbandment of the previously mentioned Joint Acquisition Task Force (JATF) before the end of 2020, potentially as a means of withdrawing from unfamiliar domains. DOD has highlighted its work to “transition current JATF operations

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<sup>239</sup> Courtney Bubl , “Lawmakers Ask Watchdog to Review New Coronavirus Data Reporting System Housed Within HHS,” *Government Executive*, August 20, 2020.

<sup>240</sup> 42 U.S.C. §5165. See FEMA, “Hazard Mitigation Planning,” at <https://www.fema.gov/emergency-managers/risk/hazard-mitigation-planning>; FEMA, “2019 National Threat and Hazard Identification and Risk Assessment (THIRA) Overview and Methodology,” July 25, 2019, at [https://www.fema.gov/sites/default/files/2020-06/fema\\_national-thira-overview-methodology\\_2019\\_0.pdf](https://www.fema.gov/sites/default/files/2020-06/fema_national-thira-overview-methodology_2019_0.pdf).

<sup>241</sup> Testimony of Ellen M. Lord, Undersecretary of Defense for Acquisition and Sustainment, U.S. Congress, House Committee on Armed Services, *Department of Defense COVID-19 Response to Defense Industrial Base Challenges*, 116<sup>th</sup> Cong., 2<sup>nd</sup> sess., June 10, 2020.

<sup>242</sup> 10 U.S.C. §2371(b)(1).

into an enduring policy and oversight office” within the Office of the Undersecretary of Defense for Acquisition and Sustainment “that will facilitate current and future DOD acquisition support to interagency partners.” However, Congress may wish to evaluate the extent to which the JATF has successfully assisted FEMA and HHS in meeting the current and projected national “demand signal” for medical resources to respond to the COVID-19 pandemic.<sup>243</sup>

## **Defense Production Act: Policy Options**

Under the DPA, the President potentially has access to a breadth of authorities that could facilitate industrial mobilization and increased domestic production and distribution of PPE, both directly and indirectly. Actual implementation of DPA authorities are at the President’s sole discretion, with relatively minimal statutory roles for congressional involvement. As such, Congress’s ability to encourage or compel the Administration to make more or less use of these powers is inherently limited. The following sections discuss various options available to Congress to affect the President’s use of the DPA.

### **Encouraging DPA’s Use**

If Congress determined that the exercise of DPA authorities has been suboptimal, it could augment those authorities with greater administrative definition within the federal government to enumerate how DPA authorities may be exercised under this and future emergency situations, and to ensure that DPA implementation is matched to the scope of the contingency.

For example, Congress could enumerate how DPA authorities may be exercised as a means to encourage the President to make greater use of DPA Title I prioritization and allocations authorities and Title III financial incentive authorities. For example, Title III incentives could be used to fund redundant production lines for PPE, develop surge capacity among existing producers, and provide purchase guarantees to supply the SNS and other stockpiles to capacity.

The DPA also confers on the President a suite of powers that may provide more indirect means of facilitating domestic PPE production and distribution. Section 705 of Title VII also provides the President with the power to compel private companies to make their records and proprietary information available to the federal government in promotion of the national defense. Under this authority, the Executive Branch could potentially collect industry information to “map” the domestic supply chain, perform an analysis of shortfalls and/or vulnerabilities, and direct the use of Title I and Title III authorities to perform corrective measures.

Title VII of the DPA also includes an authority that allows the President to establish an executive reserve comprised of industry representatives who would be available to take positions in government during emergency situations. This power could be potentially utilized to recruit industry personnel to serve in government, temporarily and as-needed, to fill capability gaps and enable industrial mobilization, including in expanding domestic PPE production and distribution.

### **Establishing Executive Infrastructure for DPA Implementation**

When the DPA was enacted in 1950, it was administered by multiple executive agencies established during the Second World War dedicated to mobilizing national industry. As a result, the DPA’s policy intent, as well as the governmental norms surrounding its use, were already in

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<sup>243</sup> Remarks by Ellen M. Lord, Undersecretary of Defense for Acquisition and Sustainment, press briefing, August 20, 2020, available at <https://www.defense.gov/Newsroom/Transcripts/Transcript/Article/2319990/ellen-m-lord-undersecretary-of-defense-for-acquisition-and-sustainment-briefs-m/>.

practice to varying degrees, while a variety of executive agencies and offices existed solely to enable industrial mobilization.

Primary responsibility for implementing DPA's use fell to the Office of Defense Mobilization,<sup>244</sup> and its two major sub-components: (1) the Defense Production Administration, which established production goals and supervised production operations; and (2) the Economic Stabilization Agency, which coordinated and supervised wage and price controls. A number of additional sub-agencies and offices fell under these two organizations' purview.<sup>245</sup> However, after the end of the Korean War, institutional responsibility for industrial mobilization using DPA powers decreased in the executive branch.

Currently, responsibility for DPA authorities are disaggregated among numerous executive agencies with individual, narrow remit. In response to the COVID-19 pandemic and in anticipation of future health, defense, and other major emergencies, Congress could consider reconstituting permanent executive capabilities with centralized coordination, contingency planning, and implementation responsibilities over the DPA, and any other related authorities deemed necessary. For example, although the DOD has the most extensive experience in making use of DPA authorities, its pre-pandemic DPA posture has been largely focused on the maintenance and durability of the defense industrial base. Under E.O. 13603, issued in 2012,<sup>246</sup> responsibilities for various DPA authorities are provided, but this directive has been partially (if temporarily) superseded by subsequent presidential directives.<sup>247</sup>

Certain DPA coordination mechanisms do exist that may be strengthened. In the 2009 DPA reauthorization, the Defense Production Act Committee (DPAC) was created, which is a multi-agency platform developed to study and advise the President on the use of DPA authorities.<sup>248</sup> Under the original amending language, the DPAC would be managed by an executive director, reporting to the DPAC chairperson, appointed by the President at the rank of Deputy Assistant Secretary. However, CRS could not identify any records of any such person having been appointed. In the 2014 DPA reauthorization, this requirement was struck from the DPA statute, and replaced by a lower-ranked "coordinator," appointed by the DPAC chairperson. The DPAC's remit was also reduced to evaluating and advising on DPA Title I authorities. DPAC has not been publicly active during the pandemic, and does not appear to be playing any particular coordinating role in the federal response.

Congress could consider restoring aspects of the 2009 DPA reauthorization language to empower the DPAC. For example, the executive director position could be restored at a similar rank, or Congress could choose to allow that position to be appointed by the Cabinet secretary rather than the President. In addition, that office could be provided with separately authorized appropriations for a standing staff, and its responsibilities broadened to encompass government-wide coordination, planning, and implementation of DPA authorities.

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<sup>244</sup> Executive Order 10193, "Providing for the Conduct of the Mobilization Effort of the Government," 3 C.F.R. §§1949-1953.

<sup>245</sup> National Archives, *Records of the Office of Civil and Defense Mobilization [OCDM]*, accessed July 30, 2020, at <https://www.archives.gov/research/guide-fed-records/groups/304.html>.

<sup>246</sup> Executive Order 13603, "National Defense Resources Preparedness," 77 *Federal Register* 16651-16660, March 22, 2012, at <https://www.federalregister.gov/documents/2012/03/22/2012-7019/national-defense-resources-preparedness>.

<sup>247</sup> In responding to the COVID-19 pandemic, this Administration's DPA-related presidential directives have routinely included language "notwithstanding" E.O. 13603, which effectively invokes the Administration discretion to override the national resources preparedness rubric as defined in the 2012 executive order.

<sup>248</sup> P.L. 111-67, 123 Stat. 2019-2020. The DPAC is now authorized in Section 722 of the DPA, 50 U.S.C. §4567.



Alternatively, Congress could create such an office separately from the DPAC, such as within an existing agency or in a new independent office or agency. For example, the recently-introduced Public Health Emergency Production Act of 2020 (PHEPA; S. 4050) would create an office in HHS ASPR with responsibility for a variety of DPA responsibilities, including a freestanding DPA Title III office, which would be led by an official at the rank of Deputy Assistant Secretary.

## Ensuring Execution of Congressional Intent

Congress could pursue oversight or legislative remedies to clarify or otherwise enforce its legislative intent with respect to the implementation of DPA authorities. For example, most of DOD's use of the \$1 billion in CARES Act appropriations to the DPA Fund has been related to supporting the defense industrial base (see "Title III Activities," and **Table 10**), and not in support of the health industrial base.

Section 304 of the DPA statute provides for a DPA Fund manager, and Section 309 of E.O. 13603 designates the Secretary of Defense as the DPA Fund Manager. Although the DPA Fund Manager is a custodian of the DPA Fund, the official does not have statutory discretion over the Fund's availability to support DPA Title III projects across government.

In its role, DOD has overseen the distribution of DPA funds and, to date, has been the only executive agency with a freestanding DPA Title III facility. As such, DOD was not required to coordinate the allocation of appropriations made to the DPA Fund with other executive agencies prior to the COVID-19 pandemic. Following the CARES Act's enactment, DOD announced that it would allocate approximately 75% of \$1 billion in DPA Fund appropriations for health and medical resources in response to the pandemic.<sup>249</sup> However, in May 2020, DOD reversed its position and announced that it would allocate \$688 million of the \$1 billion in DPA Fund appropriations in support of the defense industrial base.<sup>250</sup>

On July 14, 2020, the House Committees on Financial Services, Homeland Security, Armed Services, Foreign Affairs, and Energy and Commerce released a letter addressed to the HHS and DOD secretaries.<sup>251</sup> The letter outlined concerns over the Trump Administration's COVID-19 response, including DOD's use of DPA Title III CARES Act appropriations, noting that congressional intent was for those funds to be reserved for health and medical countermeasures, and not support of the defense industrial base.

Following media scrutiny over its use of CARES Act DPA funding,<sup>252</sup> DOD released a statement in September 2020 justifying its prioritization of the defense industrial base in its Title III projects.<sup>253</sup> In the statement, DOD noted that its actions were consistent with CARES Act

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<sup>249</sup> Department of Defense (DOD), *Undersecretary of Defense (A&S) Provides Update on DOD COVID-19 Response Efforts*, April 20, 2020, at <https://www.defense.gov/Newsroom/Transcripts/Transcript/Article/2157331/undersecretary-of-defense-as-provides-update-on-DOD-covid-19-response-efforts/>.

<sup>250</sup> See U.S. Congress, House Committee on Armed Services, *Statement by Ellen M. Lord Under Secretary of Defense for Acquisition & Sustainment*, Witness Statement, 116<sup>th</sup> Cong., June 10, 2020, at <https://www.congress.gov/116/meeting/house/110794/witnesses/HHRG-116-AS00-Wstate-LordE-20200610.pdf>. See also Tony Bertuca, "DOD Details Spending Plan for \$10.5B in COVID-19 Relief Funds," *Inside Defense*, May 30, 2020, at <https://insidedefense.com/daily-news/DOD-details-spending-plan-105b-covid-19-relief-funds>.

<sup>251</sup> U.S. Congress, House Financial Services, Letter to DOD and HHS, July 14, 2020, at [https://financialservices.house.gov/uploadedfiles/ltr\\_to\\_hhs\\_and\\_fema\\_7142020.pdf](https://financialservices.house.gov/uploadedfiles/ltr_to_hhs_and_fema_7142020.pdf).

<sup>252</sup> Aaron Gregg and Yeganeh Torbati, "Pentagon Used Taxpayer Money Meant for Masks and Swabs to Make Jet Engine Parts and Body Armor," *Washington Post*, September 22, 2020, accessed at <https://www.washingtonpost.com/business/2020/09/22/covid-funds-pentagon>.

<sup>253</sup> DOD, "Statement on the Department's Use of Defense Production Act Title III," press release, September 23, 2020, (continued...)

statutory requirements, its understanding of congressional intent, and that its intentions were briefed regularly to Congress. However, DOD's statement notwithstanding, there continues to be a dispute over the circumstances surrounding the use of CARES Act funds for DPA Title III. Senate minority report summaries of the CARES Act,<sup>254</sup> to which the House majority refers as its official summary,<sup>255</sup> state explicitly that DPA Fund appropriations are meant for health countermeasures to the COVID-19 pandemic.<sup>256</sup> By contrast, the Senate majority CARES Act summary uses broader language ("to increase access to materials necessary for national security and pandemic recovery") more consistent with DOD's position.<sup>257</sup>

At the same time, as previously noted, DOD's stated plans for Title III appropriations changed over time, at first favoring health industrial base investments before later revising its posture to prioritize the defense industrial base, which appears to be the event that triggered the July 2020 letters by House committee leadership over congressional intent. More recently, leadership of multiple House committees (Select Subcommittee on the Coronavirus Crisis, the Committee on Financial Services, the Committee on Oversight and Reform, and the Subcommittee on National Security) sent a letter to then-Defense Secretary Mark Esper contesting DOD's September 2020 statement, and announcing its own investigations.<sup>258</sup>

Congress may consider legislative remedies to further prescribe the duties and responsibilities of the DPA Fund manager and to clarify its intent over the use of DPA Title III appropriations. Alternatively, Congress could establish separate accounts for DPA Title III funds not intended for the defense industrial base.

### **Alternative Authorities Modeled After DPA**

Because DPA implementation is closely bound to matters of presidential discretion, Congress could consider providing appropriations or, as necessary, separate authorizing legislation to ensure that various agencies have access to funding and are provided certain powers that may be modeled after the DPA. For example, funding could be provided to HHS specifically to procure PPE and/or fund the expansion of productive capacity. Similarly, separate legislation could provide DPA Title I-type authorities to other agencies as deemed necessary. Although a new program within an executive agency would still be subject to presidential direction, it could be

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at <https://www.defense.gov/Newsroom/Releases/Release/Article/2358713/statement-on-the-departments-use-of-defense-production-act-title-iii/>.

<sup>254</sup> U.S. Congress, Senate, *Fighting the COVID-19 Public Health Crisis*, prepared by Senate Democrats, 116<sup>th</sup> Cong., March 2020, p. 4, accessed at [https://www.markey.senate.gov/imo/media/doc/C-3\\_summary\\_V1.2-updated.pdf](https://www.markey.senate.gov/imo/media/doc/C-3_summary_V1.2-updated.pdf).

<sup>255</sup> U.S. Congress, House Committee on Appropriations, *COVID-19 Response*, 116<sup>th</sup> Cong., accessed November 03, 2020, at <https://appropriations.house.gov/news/covid-19-response>.

<sup>256</sup> U.S. Congress, Senate Committee on Appropriations, H.R. 748 The Coronavirus Aid, Relief, and Economic Security Act: Title-By-Title Summary Prepared by the Office of Vice Chairman Leahy (D-Vt.), 116<sup>th</sup> Cong., March 25, 2020, p. 4, at <https://www.appropriations.senate.gov/imo/media/doc/032520%20Title-By-Title%20Summary%20FINAL.pdf>.

<sup>257</sup> U.S. Congress, Senate Committee on Appropriations, *\$340 Billion Surge in Emergency Funding to Combat Coronavirus Outbreak*, 116<sup>th</sup> Cong., March 2020, p. 6, accessed at [https://www.appropriations.senate.gov/imo/media/doc/Coronavirus%20Supplemental%20Appropriations%20Summary\\_FINAL.pdf](https://www.appropriations.senate.gov/imo/media/doc/Coronavirus%20Supplemental%20Appropriations%20Summary_FINAL.pdf).

<sup>258</sup> Letter from Hon. James E. Clyburn, Chairman, House Select Subcommittee on the Coronavirus Crisis; Hon. Maxine Waters, Chairwoman, House Committee on Financial Services; Hon. Carolyn B. Maloney, Chairwoman, House Committee on Oversight and Reform; and Hon. Stephen F. Lynch, Chairman, House Subcommittee on National Security, to Hon. Mark T. Esper, Secretary of Defense, October 2, 2020, at <https://coronavirus.house.gov/sites/democrats.coronavirus.house.gov/files/2020-10-02.Clyburn%20Waters%20CBM%20SFL%20%20to%20Esper-%20DOD%20re%20CARES%20Act.pdf>.

authorized as a standing agency function, allowing it to operate independently of contingency-based presidential invocation.

## Appendix A. Context: Federal Procurement Process

The overarching purpose of the federal acquisition system is to provide the means for federal agencies to buy the goods (e.g., equipment and supplies) and services they need to accomplish their missions. As described in the *Federal Acquisition Regulation* (FAR),<sup>259</sup> the federal acquisition system will

- (1) Satisfy the customer in terms of cost, quality, and timeliness of the delivered product or service by, for example- (i) Maximizing the use of commercial products and services; (ii) Using contractors who have a track record of successful past performance or who demonstrate a current superior ability to perform; and (iii) Promoting competition; (2) Minimize administrative operating costs; (3) Conduct business with integrity, fairness, and openness; and (4) Fulfill public policy objectives.<sup>260</sup>

Although the federal acquisition system was not designed to maintain or encourage domestic production of supplies or equipment, misconceptions involving certain elements of the acquisition system might lead some to view it as a possible mechanism for that purpose.<sup>261</sup> Beginning with its title, the Buy American Act might be viewed as a means for encouraging domestic production or sourcing for goods and construction materials.<sup>262</sup> The statute was developed to “restrict the purchase of supplies that are not domestic end products.”<sup>263</sup> However, the two-part test used to determine whether an item is a domestic end product allows the item to partially contain non-domestic components. That is, an “article must be manufactured in the United States and ... [t]he cost of domestic components must exceed 50 percent of all the components” for the item to be considered a domestic end product.<sup>264</sup> Other factors that could mitigate the cumulative effect of this statute on domestic production include its applicability (it applies only to federal agencies’ purchases above certain monetary thresholds), exceptions which permit agencies “to acquire ... foreign end product[s] without regard to the restrictions of the Buy American statute,” and the authority exercised pursuant to the Trade Agreements Act.<sup>265</sup>

Another illustrative example involves subpart 6.3 of the FAR, which permits an agency to use noncompetitive procedures under seven specified circumstances. For example, noncompetitive procedures may be used when “it is necessary to award the contract to a particular source or sources in order ... [t]o maintain a facility, producer, manufacturer, or other supplier available for furnishing supplies or services in case of a national emergency or to achieve industrial mobilization.”<sup>266</sup> Application of this authority may be appropriate in several situations, including the following: “Keep vital facilities or supplies in business or make them available in the event of a national emergency,” or “Train a selected supplier in the furnishing of critical supplies or services, prevent the loss of a supplier’s ability and employees’ skills, or maintain active engineering, research, or development work.”<sup>267</sup> Although it is possible to obtain procurement

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<sup>259</sup> The FAR consists of Parts 1-53 of the Title 48 of the *Code of Federal Regulations*.

<sup>260</sup> FAR 1.102(b). It is common practice to not include “section” or the symbol for “section” when citing the FAR in this manner.

<sup>261</sup> The FAR does not contain a definition of *domestic production* or *domestic goods*. As discussed below, the FAR does include a description of *domestic end product*, which is specific to the Buy American Act.

<sup>262</sup> The statute is codified at 41 U.S.C. §§8301-8305.

<sup>263</sup> FAR 25.101(a).

<sup>264</sup> *Ibid.*

<sup>265</sup> FAR 25.103 and 25.402.

<sup>266</sup> FAR 6.302-3(a)(2)(i).

<sup>267</sup> FAR 6.302-3(b)(1)(i) and (ii).



data from the FPDS-NG that shows which agencies, if any, have used this exception and for how many procurements, the database does not contain information that would indicate whether the desired outcome was achieved (e.g., a domestic facility was maintained) and for how long. That is, did the facility or manufacturer maintain, increase, cease, or decrease operations after the federal government contract(s) expired? Depending on the market for a particular company's products, its financial health, the pool of incumbent and potential employees, and other factors, the awarding of a federal contract (or even multiple contracts) may not be sufficient to sustain a company.

## Federal Procurement Flexibilities

When dealing with an emergency or disaster, agencies may use a variety of procurement flexibilities to facilitate and expedite the procurement process. To assist agencies in identifying or finding these flexibilities, the FAR was revised in 2007 to create "a single reference to acquisition flexibilities [already available in the FAR] that may be used to facilitate and expedite acquisitions of supplies and services during emergency situations."<sup>268</sup> This revision of Part 18 of the FAR created two subparts: Subpart 18.1 "identifies flexibilities that may be used anytime and do not require an emergency declaration," and Subpart 18.2 "identifies the flexibilities that may be used only after an emergency declaration or designation has been made by the appropriate official."<sup>269</sup>

The 26 acquisition flexibilities identified in Subpart 18.1 include the following:

- FAR 6.302-2 identifies a circumstance of "unusual and compelling urgency" as a procurement flexibility for emergency situations.<sup>270</sup> Generally, it is the policy of the federal government to engage in full and open competition,<sup>271</sup> but agencies may use other than full and open competition (also known as "noncompetitive procedures") under seven circumstances, one of which is unusual and compelling urgency. FAR 6.302-2 is cross-referenced in FAR 18.104.
- FAR 4.1102(a) identifies the relevant circumstances under which a contractor is not required to be registered in the federal government's System for Award Management (SAM) at the time the contractor submits an offer or a quotation to an agency. The list of circumstances includes contracts awarded using noncompetitive procedures due to unusual and compelling urgency and contracts awarded in "the conduct of emergency operations."<sup>272</sup> Usually, contractors are required to be registered in SAM at the time they submit an offer or a quotation. FAR 4.1102 is cross-referenced in FAR 18.102.

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<sup>268</sup> U.S. Department of Defense, U.S. General Services Administration, and National Aeronautics and Space Administration, "Federal Acquisition Regulation; FAR Case 2005-038, Emergency Acquisitions," 72 *Federal Register* 46342, August 17, 2007.

<sup>269</sup> U.S. Department of Defense, U.S. General Services Administration, and National Aeronautics and Space Administration, "Federal Acquisition Regulation; FAR Case 2005-038, Emergency Acquisitions," 71 *Federal Register* 38248, July 5, 2006.

<sup>270</sup> Agencies also may use any of the other circumstances for procurements during emergency situations, as appropriate. They are as follows: (1) only one responsible source and no other supplies or services will satisfy agency requirements; (2) industrial mobilization; engineering, developmental, or research capability; or expert services; (3) international agreement; (4) authorized or required by statute; (5) national security; and (6) public interest. (FAR 6.302-1, 6.302-3, 6.302-4, 6.302-5, 6.302-6, and 6.302-7.)

<sup>271</sup> 10 U.S.C. §2304 and 41 U.S.C. §3301 require, "with certain limited exceptions (see subpart 6.2 and 6.3 [of the FAR]), that contracting officers shall promote and provide for full and open competition in soliciting offers and awarding Government contracts." (FAR 6.101(a).)

<sup>272</sup> FAR 4.1102(a)(3)(iii) and (5).

- FAR 15.203(f) states that oral requests for proposals (RFPs) may be authorized when certain conditions are met. FAR 15.203(f) allows the use of oral proposals “when processing a written solicitation would delay the acquisition of supplies or services to the detriment of the Government and a notice is not required under [FAR] 5.202 (e.g., perishable items and support of contingency or other emergency situations).” Usually, an agency is required to issue an RFP and post it on Beta.SAM.gov, a federal government website.<sup>273</sup> FAR 15.203(f) is cross-referenced in FAR 18.111.

Unlike Subpart 18.1, Subpart 18.2 contains acquisition flexibilities that may be used only when the appropriate official has made an emergency declaration or designation. Perhaps one of the best known acquisition flexibilities referenced in Subpart 18.2 is the local contracting preference, which is found in the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the Stafford Act)<sup>274</sup> and is cross referenced in FAR 18.203. Codified at 42 U.S.C. §5150, this provision states that, when awarding contracts for disaster or emergency assistance activities, agencies are to give preference, “to the extent feasible and practicable,” to local firms.<sup>275</sup> The implementing regulation states that preference “may be given through a local area set-aside or an evaluation preference.”<sup>276</sup>

The Office of Management and Budget (OMB) has explained that the preference for local firms is not applicable to the COVID-19 pandemic, noting the language of the emergency declaration under the Stafford Act that “an emergency exists nationwide.”<sup>277</sup> OMB’s guidance noted that, because “there is no locally affected area,” the federal government’s acquisition workforce is not required to create preferences for local firms.<sup>278</sup>

## Federal Government Procurement Data

Information regarding pandemic-related federal government procurements may be found on the Beta.SAM.gov website, which is administered by the General Services Administration (GSA). The website contains, among other information, contract opportunities (i.e., solicitations, such as RFPs, invitations for bids (IFBs), and requests for quotations (RFQs) and information about contract awards). For example, OMB encourages agencies to use “COVID-19” or “Coronavirus” in their solicitations and related documentation to aid in identifying procurements related to the pandemic.<sup>279</sup>

Information about contract actions,<sup>280</sup> including those related to the pandemic, resides in the Federal Procurement Data System-Next Generation (FPDS-NG or FPDS) database, which may be

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<sup>273</sup> FAR 5.201.

<sup>274</sup> 42 U.S.C. §§5121 et seq.

<sup>275</sup> 42 U.S.C. §5150(a)(1).

<sup>276</sup> FAR 26.202(a).

<sup>277</sup> President Donald J. Trump, letter to Chad F. Wolf, Secretary of Homeland Security; Steven T. Mnuchin, Secretary of the Treasury; Alex M. Azar, II, Secretary of Health and Human Services; and Pete T. Gaynor, Administrator, Federal Emergency Management Agency, March 13, 2020, p. 2, at <https://www.whitehouse.gov/wp-content/uploads/2020/03/LetterFromThePresident.pdf>.

<sup>278</sup> Margaret M. Weichert, Deputy Director for Management, U.S. Office of Management and Budget, “Managing Federal Contract Performance Issues Associated with the Novel Coronavirus (COVID-19),” M-20-18, March 20, 2020, pp. 6-7, at <https://www.whitehouse.gov/wp-content/uploads/2020/03/M-20-18.pdf>.

<sup>279</sup> *Ibid.*, p. 7.

<sup>280</sup> The term *contract action* means “any oral or written action that results in the purchase, rent, or lease of supplies or (continued...)”

accessed using Beta.SAM.gov.<sup>281</sup> Agencies are required to submit data regarding unclassified contract actions whose value exceeds the micropurchase threshold to FPDS.<sup>282</sup>

In March 2020, GSA created a National Interest Action (NIA) name and code for pandemic-related contract awards: COVID-19 2020 and P20C, respectively. Initially, agencies were to assign the COVID-19 2020 code to contract actions related to the pandemic and that involved “the exercise of emergency authorities identified in” Subpart 18.2 of the FAR.<sup>283</sup> Subsequently, the Office of Federal Procurement Policy updated this guidance, stating that agencies are to assign the code to “all procurement actions reported into FPDS that are issued in response to the pandemic.”<sup>284</sup> In this context, “all procurement actions” includes new contract awards and any modifications issued to address COVID-19, “irrespective of whether the contract being modified was originally awarded to address the pandemic.”<sup>285</sup> Initially, the end date for applying the NIA code for COVID-19 was July 1, 2020.<sup>286</sup> Subsequently, in an undated announcement posted on the FPDS website, GSA stated the end date had been changed to March 31, 2021.<sup>287</sup>

The COVID-19 Report, a periodically updated spreadsheet that contains all contract actions assigned the NIA code for the pandemic, is available from the main page of the FPDS website and the Contract Data Reports-Static web page of Beta.SAM.gov.

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equipment, services, or construction using appropriated dollars over the micro-purchase threshold, or modifications to these actions regardless of dollar value. Contract action does not include grants, cooperative agreements, other transactions, real property leases, requisitions from Federal stock, training authorizations, or other non-FAR based transactions.” (FAR 4.601.)

<sup>281</sup> FPDS is available at [https://www.fpds.gov/fpdsng\\_cms/index.php/en/](https://www.fpds.gov/fpdsng_cms/index.php/en/); Beta.SAM.gov is available at <https://beta.sam.gov/>.

<sup>282</sup> FAR 4. 606(a). Generally, the micropurchase threshold is \$10,000.

<sup>283</sup> Weichert, “Managing Federal Contract Performance Issues Associated with the Novel Coronavirus (COVID-19),” p. 7.

<sup>284</sup> Message sent on behalf of Michael E. Wooten, Administrator for Federal Procurement Policy, “Update to Guidance on Application of National Interest Action (NIA) Code to Increase Transparency,” April 6, 2020, at [https://www.acquisition.gov/sites/default/files/page\\_file\\_uploads/Update-to-Guidance-on-Application-of-NIA-Code-to-Increase-Transparency-April-6-2020.pdf](https://www.acquisition.gov/sites/default/files/page_file_uploads/Update-to-Guidance-on-Application-of-NIA-Code-to-Increase-Transparency-April-6-2020.pdf). (Underlining in original.)

<sup>285</sup> *Ibid.*

<sup>286</sup> Weichert, “Managing Federal Contract Performance Issues Associated with the Novel Coronavirus (COVID-19),” p. 7.

<sup>287</sup> U.S. General Services Administration, Federal Procurement Data System-Next Generation, “NIA Extension for COVID-19,” at [https://www.fpds.gov/fpdsng\\_cms/index.php/en/newsroom.html](https://www.fpds.gov/fpdsng_cms/index.php/en/newsroom.html).

## Appendix B. Experts List

**Table B-I. CRS Authors and Relevant Reporting**

by issue area

Issue Area	Relevant CRS Products	CRS Analyst(s)
DOD Acquisition	<ul style="list-style-type: none"> <li>CRS Insight INI 1288, <i>COVID-19 and the Defense Industrial Base: DOD Response and Legislative Considerations</i>, by Heidi M. Peters</li> </ul>	<ul style="list-style-type: none"> <li><b>Heidi M. Peters</b>, Analyst in U.S. Defense Acquisition Policy</li> </ul>
Defense Logistics Agency	<ul style="list-style-type: none"> <li>CRS In Focus IFI 1543, <i>Defense Primer: The Defense Logistics Agency</i>, by G. James Herrera and Hibbah Kaileh</li> <li>CRS In Focus IFI 1574, <i>National Stockpiles: Background and Issues for Congress</i>, by G. James Herrera and Frank Gotttron</li> </ul>	<ul style="list-style-type: none"> <li><b>G. James Herrera</b>, Analyst in U.S. Defense Readiness and Infrastructure</li> <li><b>Tyler F. Hacker</b>, Analyst in Defense Logistics (non-author)</li> </ul>
Defense Production Act	<ul style="list-style-type: none"> <li>CRS Insight INI 1470, <i>Defense Production Act (DPA): Recent Developments in Response to COVID-19</i>, by Michael H. Cecire and Heidi M. Peters</li> <li>CRS Insight INI 1387, <i>COVID-19: Defense Production Act (DPA) Developments and Issues for Congress</i>, by Michael H. Cecire and Heidi M. Peters</li> <li>CRS Insight INI 1337, <i>The Defense Production Act (DPA) and the COVID-19 Pandemic: Recent Developments and Policy Considerations</i>, by Michael H. Cecire and Heidi M. Peters</li> <li>CRS Insight INI 1280, <i>COVID-19: Industrial Mobilization and Defense Production Act (DPA) Implementation</i>, by Michael H. Cecire and Heidi M. Peters</li> <li>CRS Insight INI 1231, <i>The Defense Production Act (DPA) and COVID-19: Key Authorities and Policy Considerations</i>, by Michael H. Cecire and Heidi M. Peters</li> <li>CRS Report R43767, <i>The Defense Production Act of 1950: History, Authorities, and Considerations for Congress</i>, by Michael H. Cecire and Heidi M. Peters</li> </ul>	<ul style="list-style-type: none"> <li><b>Michael H. Cecire</b>, Analyst in Intergovernmental Relations and Economic Development Policy</li> <li><b>Heidi M. Peters</b>, Analyst in U.S. Defense Acquisition Policy</li> </ul>
Federal Procurement	<ul style="list-style-type: none"> <li>CRS Report 98-505, <i>National Emergency Powers</i>, by L. Elaine Halchin</li> <li>CRS Insight INI 1264, <i>Presidential Declarations of Emergency for COVID-19: NEA and Stafford Act</i>, by L. Elaine Halchin and Elizabeth M. Webster</li> <li>CRS Report RS22536, <i>Overview of the Federal Procurement Process and Resources</i>, by L. Elaine Halchin</li> </ul>	<ul style="list-style-type: none"> <li><b>L. Elaine Halchin</b>, Specialist in American National Government</li> </ul>
FDA Regulation of PPE and Related Activities	<ul style="list-style-type: none"> <li>CRS In Focus IFI 1488, <i>Personal Protective Equipment (PPE) and COVID-19: FDA Regulation and Related Activities</i>, by Agata Bodie and Victoria R. Green</li> <li>CRS Report R46507, <i>FDA's Role in the Medical Product Supply Chain and Considerations During COVID-19</i>, by Victoria R. Green, Agata Bodie, and Kate M. Costin</li> <li>CRS In Focus IFI 0745, <i>Emergency Use Authorization and FDA's Related Authorities</i>, by Agata Bodie</li> </ul>	<ul style="list-style-type: none"> <li><b>Agata Bodie</b>, Analyst in Health Policy</li> <li><b>Victoria R. Green</b>, Analyst in Health Policy</li> </ul>



Issue Area	Relevant CRS Products	CRS Analyst(s)
International Trade and Finance	<ul style="list-style-type: none"> <li>• CRS Report R46304, <i>COVID-19: China Medical Supply Chains and Broader Trade Issues</i>, coordinated by Karen M. Sutter</li> <li>• CRS In Focus IFI1648, <i>Medical Supply Chains and Policy Options: The Data Challenge</i>, by Andres B. Schwarzenberg and Karen M. Sutter</li> <li>• CRS In Focus IFI0964, “<i>Made in China 2025</i>” <i>Industrial Policies: Issues for Congress</i>, by Karen M. Sutter</li> <li>• CRS In Focus IFI1580, <i>U.S. Government Procurement and International Trade</i>, by Andres B. Schwarzenberg</li> <li>• CRS In Focus IFI1551, <i>Export Restrictions in Response to the COVID-19 Pandemic</i>, by Christopher A. Casey and Cathleen D. Cimino-Isaacs</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Andres B. Schwarzenberg</b>, Analyst in International Trade and Finance</li> <li>• <b>Michael D. Sutherland</b>, Analyst in International Trade and Finance</li> <li>• <b>Karen M. Sutter</b>, Specialist in Asian Trade and Finance</li> </ul>
Public Health Surveillance and Data	<ul style="list-style-type: none"> <li>• CRS Report R46588, <i>Tracking COVID-19: U.S. Public Health Surveillance and Data</i>, by Kavya Sekar and Angela Napili</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Kavya Sekar</b>, Analyst in Health Policy</li> </ul>
Strategic National Stockpile	<ul style="list-style-type: none"> <li>• CRS In Focus IFI1574, <i>National Stockpiles: Background and Issues for Congress</i>, by G. James Herrera and Frank Gottron</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Frank Gottron</b>, Specialist in Science and Technology Policy</li> </ul>

**Source:** Tabulated by CRS.

**Notes:** This experts list is not necessarily exhaustive and may not cover all aspects of a particular request, which may require additional expertise not listed here.

## Appendix C. COVID-19 Supply Chain Task Force Data on PPE Supply and Demand

The COVID-19 Supply Chain Task Force presented the following charts to Senator Margaret Hassan, ranking member on the Senate Homeland Security and Governmental Affairs Committee's Subcommittee on Federal Spending Oversight and Emergency Management, in advance of a June 9, 2020, hearing held by the committee on federal COVID-19 response efforts. The Senator made these documents public.

The introduction to the documents explained that “The demand estimates are at the high end of expectations to ensure medical workers, first responders, etc. do not go without necessary PPE during a future pandemic or natural disasters.”

**Note:** These data and graphics are produced by the COVID-19 Supply Chain Task Force. CRS cannot verify the accuracy of the data or explicate the methodology presented in these documents. CRS has requested updated information and data from FEMA, but had received no response as of November 2020.

### Supply Chain Task Force Definitions

According to the Supply Chain Task Force, the definitions included in the charts are as follows:

- “Our high end demand estimates” are informed by: Interagency analyses; Industry estimates; Historical demand data from industry and best available data from six major U.S. medical-surgical distributors; Historical manufacturing data; [is] Exclusive of SNS needs; Steadily declining COVID hospitalization rates should reduce daily hospital PPE usage, but demand through summer may remain constant as hospitals and states replenish stockpiles, and to meet reopening requirements.
- “Estimated monthly production” is informed by: For N95 respirators: actual figures from 3M, Owens and Minor, Honeywell, Moldex, and Prestige Ameritech; For surgical masks, gloves, face shields, gowns: estimates calculated from the actuals and reported production percentages; Estimated overseas production are produced overseas and distributed domestically to satisfy requirement; Non-traditional suppliers (*sic*) estimated impact on production; Battelle decontamination methods can lengthen the useful life of a N95mask; Historical manufacturing data.
- “Delivered—provided by Big 6” is informed by: Best available distribution data of six major U.S. medical-surgical distributors. Big 6 Distributors make up 90% of the U.S. medical-surgical distributors; “Delivered—provided by Big 6” includes Airbridge, other FEMA procurements, and the recent nursing home deliveries. Also accounted for in addition to deliveries: Non-traditional suppliers for face shields; Boeing, Ford, Universities, etc.; Reusable gowns estimated shipments (*sic*).

The following graphics, which are now publicly available, originated from Supply Chain Task Force representative Rear Admiral John P. Polowczyk, “White House COVID-19 Supply Chain Task Force,” submitted to Senator Margaret Hassan in advance of a June 2020 hearing.<sup>288</sup> These data and graphics are produced by the COVID-19 Supply Chain Task Force. As such, CRS cannot verify the accuracy of the data or explain the methodology presented in these documents. According to the Supply Chain Task Force, the data does not include “procurement by states, commercial donations, distribution data of other medical-surgical distributors, direct shipments from manufacturers.”

<sup>288</sup> U.S. Senate, Committee on Homeland Security and Governmental Affairs, Evaluating the Federal Government's Procurement and Distribution Strategies in Response to the COVID-19 Pandemic, June 9, 2020, at <https://www.hassan.senate.gov/imo/media/doc/SCTF%20Demand%20PPE%20Chart.pdf>.

Figure C-1. COVID-19 Supply Chain Task Force Data on N95 Respirator Supply and Demand

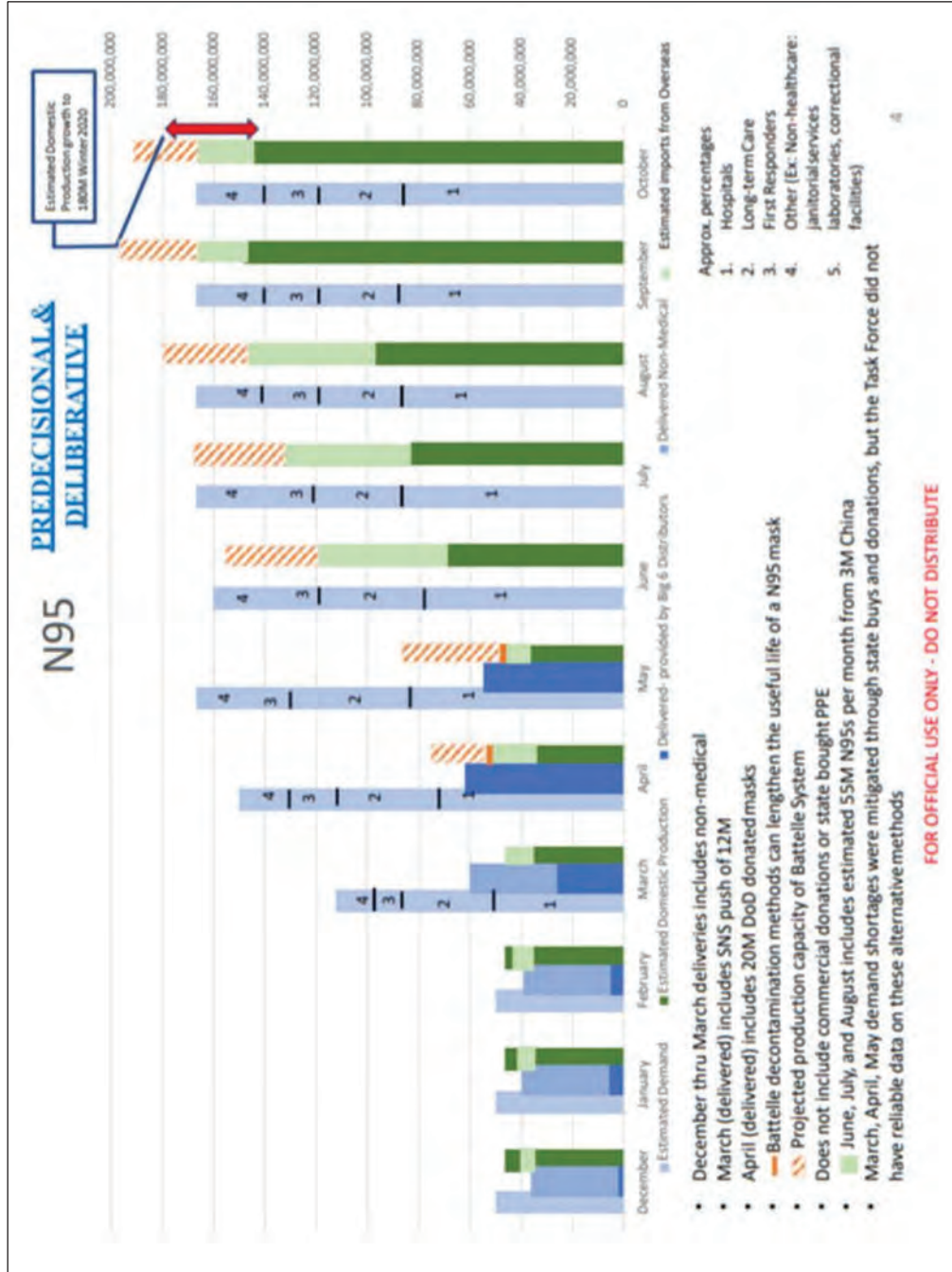


Figure C-2. Supply Chain Task Force Data on Gown Supply and Demand

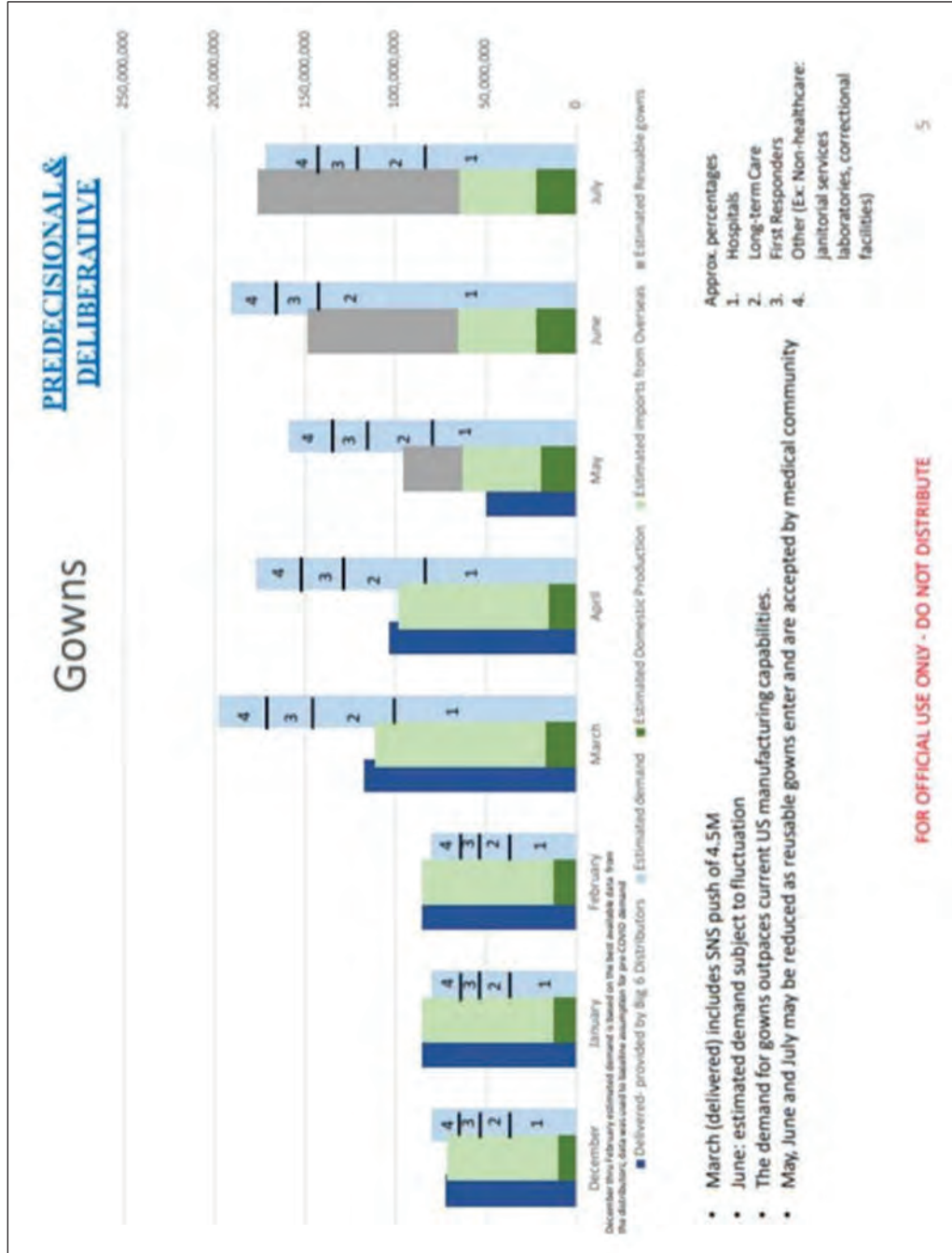




Figure C-3. Supply Chain Task Force Data on Surgical Mask Supply and Demand

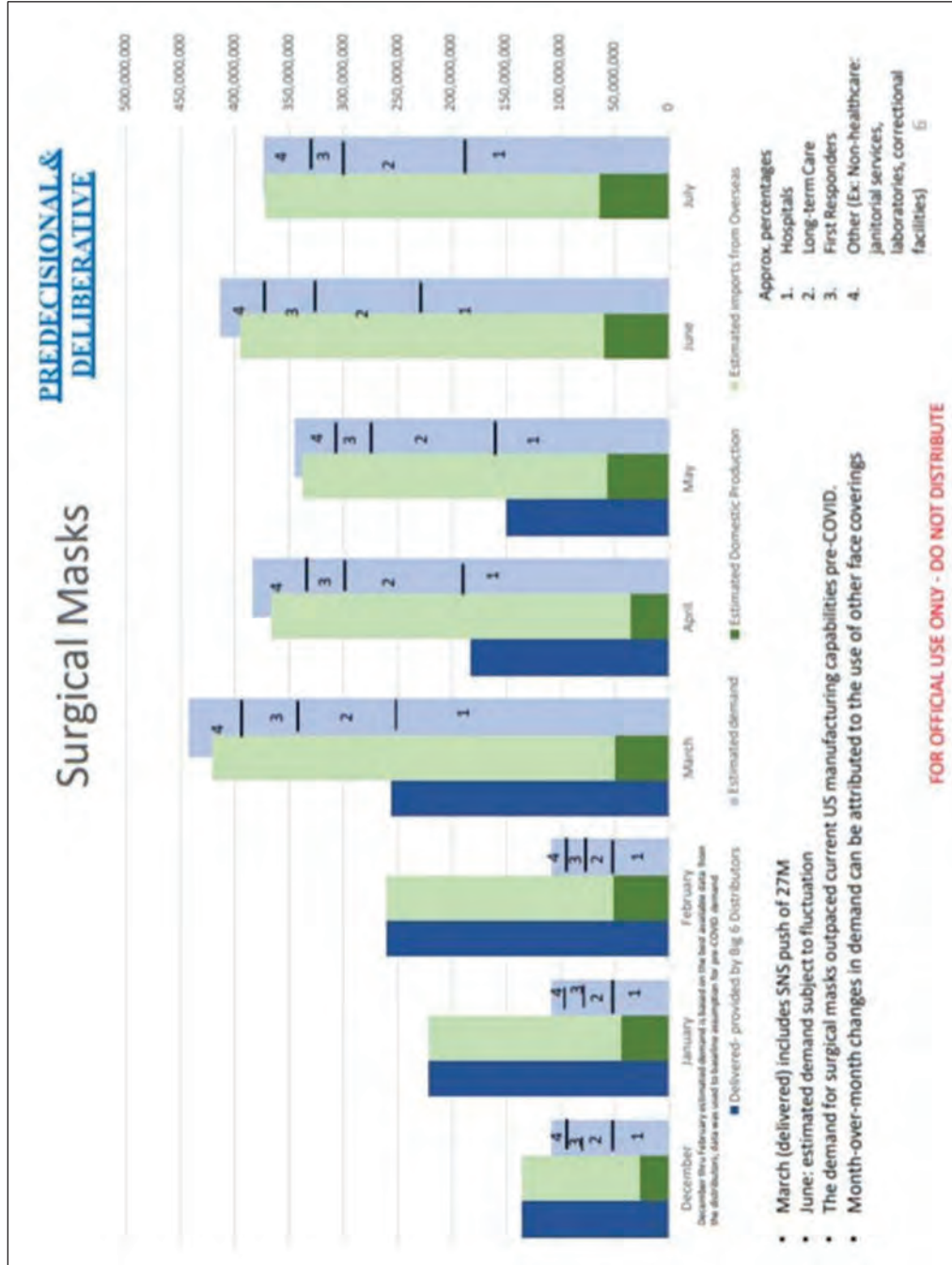
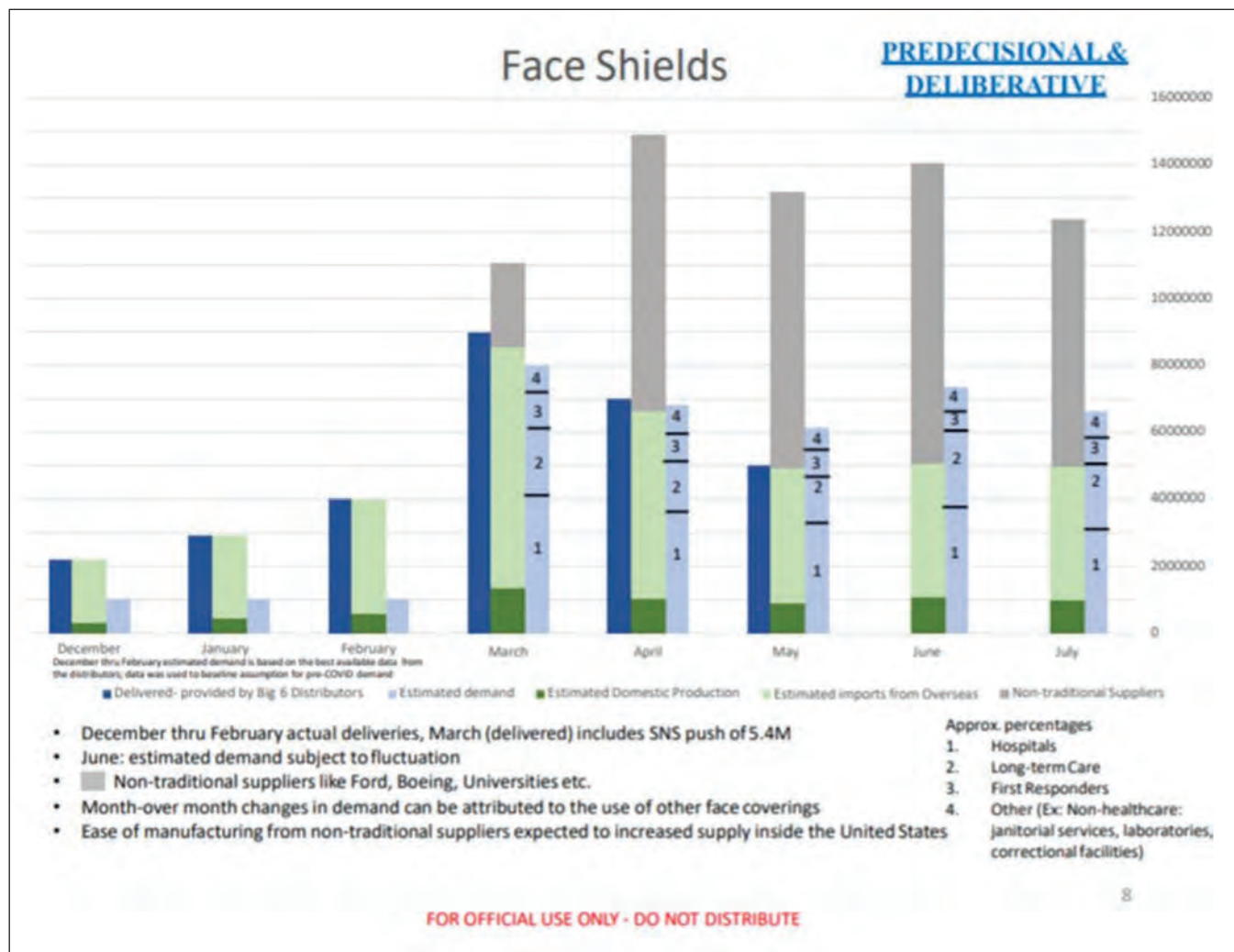


Figure C-4. Supply Chain Task Force Data on Nitrile Gloves Supply and Demand



Figure C-5. Supply Chain Task Force Data on Face Shields Supply and Demand



## Appendix D. PPE Imports Tabulations

**Table D-1. Estimate of the Imported Share of U.S. Domestic Supply:  
Selected PPE and Medical-Related Categories**

Share of Domestic Supply (%) in 2018

NAICS Code	Description	Total Imports, Share of U.S. Supply	Imports from the EU28, Share of U.S. Supply	Imports from China, Share of U.S. Supply
315220	<b>Men's and Boys' Cut and Sew Apparel</b> [apparel from fabric, including hospital/medical/laboratory service apparel]	98	3	20
315240	<b>Women's, Girls', and Infants' Cut and Sew Apparel</b> [apparel from fabric, including hospital/medical/laboratory service apparel]	96	3	36
333314	Optical Instruments and Lenses [microscopes, telescopes, prisms, and lenses; coating or polishing lenses; and mounting lenses]	94	14	23
325414	Biological Products (Except Diagnostic) [vaccines, toxoids, blood fractions, and culture media of plant or animal origin, except diagnostic]	79	59	*
339115	<b>Ophthalmic Goods</b> [prescription eyeglasses, contact lenses, sunglasses, eyeglass frames, reading glasses made to standard powers, and protective eyewear]	60	22	20
313210	<b>Broadwoven Fabrics</b> [fabrics and felts, including surgical gauzes]	55	10	17
325411	Medicinal and Botanical Drugs and Vitamins [uncompounded medicinal chemicals and their derivatives and botanicals]	48	34	8
325413	In-Vitro Diagnostic Substances [chemical, biological, or radioactive diagnostic substances]	48	27	3
325199	All Other Basic Organic Chemicals [isopropyl alcohol and glycerin]	42	14	9
334517	Irradiation Apparatus [beta-rays, gamma-rays, X-rays, or other ionizing radiation apparatus]	41	25	4
339113	<b>Surgical Appliances and Supplies</b> [orthopedic devices, prosthetic appliances, surgical dressings, crutches, surgical sutures, personal industrial safety devices]	39	15	6
325412	Pharmaceutical Preparations [in-vivo diagnostic substances and pharmaceutical preparations]	39	23	*



NAICS Code	Description	Total Imports, Share of U.S. Supply	Imports from the EU28, Share of U.S. Supply	Imports from China. Share of U.S. Supply
339112	Surgical and Medical Instruments [syringes, needles, anesthesia apparatus, blood transfusion equipment, catheters, surgical clamps, and medical thermometers]	36	10	2

**Source:** CRS analysis with data from the U.S. Census Bureau, the U.S. Bureau of Economic Analysis, and the U.S. International Trade Commission.

**Notes:** (1) Rough estimates calculated at the NAICS six-digit subheading level, which may cover products that are not for medical use; (2) \* = Share of domestic supply is less than 0.05%; (3) descriptions in brackets are only selected examples of products covered by the NAICS subheading; (4) data likely understate the extent to which the United States relies on China for certain products. NAICS categories in **bold** likely include articles that could be considered PPE.

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# Exhibit 12

WHO/HSE/IHR/2010.4



## **WHO Guidance for the Use of Annex 2 of the INTERNATIONAL HEALTH REGULATIONS (2005)**

**Decision instrument for the  
assessment and notification of  
events that may constitute a public  
health emergency of international  
concern**

International Health Regulations  
Coordination



**World Health  
Organization**





WHO/HSE/IHR/2010.4

## **WHO Guidance for the use of Annex 2 of the INTERNATIONAL HEALTH REGULATIONS (2005)**

**Decision instrument for the assessment and notification of events that may  
constitute a public health emergency of international concern**



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## **1. Introduction**

Under the International Health Regulations (2005) (IHR (2005)), States Parties are required to carry out an assessment of public health events arising in their territories utilizing the decision instrument contained in Annex 2 of the Regulations, and then to notify WHO of all qualifying events within 24 hours of such an assessment. The purpose of the WHO guidance on Annex 2 is to help national authorities to use the decision instrument in assessing public health events that may require notification to WHO.

### **1.1. Guidance for the utilization of Annex 2**

The guidance document for the use of Annex 2 of the IHR (2005) is targeted to National IHR Focal Points (NFPs) and others responsible for assessing the need to notify WHO of public health events under the Regulations. The procedures described in this document are designed to support States Parties in the legally required use of Annex 2 but are not themselves of a legally binding nature. In the absence of scientific analysis upon which to base such guidance the approach taken was to explain the role and function of the decision instrument and to describe when and how to use it. Importantly, a number of case scenarios were included to illustrate the application of the assessment criteria. Through these scenarios, the four criteria set out in the decision instrument are tested against fictional events, while applying established epidemiological and public health principles.

### **1.2. Development of the guidance document**

This guidance for the use of Annex 2 was prepared by the WHO Secretariat and builds on input from experts and WHO staff, including WHO Regional Offices, experienced in the development and application of the decision instrument. The previous WHO interim guidance was refined by a group of experts and users from around the world during a technical consultation held in Geneva at the end of October 2008 (please see [http://www.who.int/ihr/summary\\_report\\_annex2.pdf](http://www.who.int/ihr/summary_report_annex2.pdf)). This present version incorporates the changes advised during the consultation.

### **1.3. The origins of Annex 2**

In May 2001, the World Health Assembly expressed its support for ongoing work on the revision of the International Health Regulations, including the notification of events of urgent and international importance by countries to WHO instead of disease specific notification. To assist in the development of a new reporting mechanism, WHO commissioned the Swedish Institute of Infectious Disease Control to conduct a consultation process among public health experts in order to (1) define what constitutes an urgent international public health event and (2) develop an operational framework to be used at country level when assessing the international importance of public health emergencies.

Following an expert meeting in January 2002, criteria were developed, including an algorithm, to be used by countries to assess the urgent and international character of public health events. Based on an international evaluation that tested the usefulness of the notification assessment tool at country level, changes were made to the algorithm and to the explanatory section that supports the application of the four decision instrument criteria. In 2004-2005, the content and format was negotiated, amended and agreed by an Intergovernmental Working Group established by the 56th World Health Assembly. This process was informed by the report of an Ad Hoc Expert Group on Annex 2 of the draft revised International Health Regulations in February 2005. Finally, the International Health Regulations (2005), including the decision instrument in Annex 2 were adopted by the 58th World Health Assembly on 23 May 2005 (Resolution WHA 58.3)

#### 1.4. Other types of reporting to WHO

In addition to notification under Article 6 and Annex 2, other provisions in the IHR (2005) require reporting to WHO. An additional important option for States Parties assessing events is to **consult** with WHO in circumstances not at the time requiring notification or where related guidance is needed (Article 8). This consultation process can be appropriate when there is insufficient available information to complete the decision instrument assessment, or if a State Party seeks advice on appropriate public health investigative or response measures, or otherwise wishes to keep WHO informed.

Under Article 9.2, **other reports**, States Parties must inform WHO within 24 hours of receipt of evidence of a public health risk identified outside their territory that may cause international disease spread, as manifested by imported or exported human cases, infected or contaminated vectors or contaminated goods.

In contrast to communications initiated by States Parties such as notification and consultation, States Parties are required under the IHR (2005) to respond to **WHO Requests for Verification**. WHO has an expressed mandate to obtain verification from States Parties concerning unofficial reports or communications, received from various sources, about events arising within their territories which may constitute a Public Health Emergency of International Concern (PHEIC). These reports are initially screened by WHO prior to a decision in some cases to request verification. States Parties must acknowledge verification requests by WHO within 24 hours and provide public health information on the status of the event, followed, in a timely manner, by continued communication of accurate and sufficiently detailed public health information available to the notifying State Party.

#### 1.5. Public health benefits of early notifications or consultations

- A) **collaborative risk assessment** between WHO and the notifying State Party to determine whether further action is required; and
- B) **assistance by WHO** to the notifying State Party in potential public health investigation and response.

Notification initiates an exclusive dialogue between the notifying State Party and WHO concerning the event at issue, and it does not mean that the notified event will necessarily be determined to be a public health emergency of international concern (which will be quite rare), or that WHO will take any specific leadership in the response.

## 2. Objectives of this guidance

This guidance is written to assist States Parties to implement the International Health Regulations (2005) (“IHR (2005)” or “Regulations”) with regards to assessing public health events that may require notification to WHO. Under Article 6 of the IHR (2005), States Parties are required to carry out an assessment of events occurring within their territories using the decision instrument provided in Annex 2 of the Regulations. Any event that meets the decision instrument's criteria must be notified to WHO within 24 hours of assessment by the State Party. Consistent application by States Parties of the assessment and notification requirements under the IHR (2005) is crucial to ensure prompt communication to WHO of those events which may need immediate coordinated international public health assessment and response. Accordingly, this guidance emphasizes the use of the decision instrument on a routine basis as part of an essential risk assessment approach to notification to WHO. A consistent application of the processes used by States Parties for event communications will support WHO global surveillance and response functions for international public health security.

This guidance aims to provide all State Party personnel participating in decision-making relating to notification to WHO with a clear understanding of:

- A) the **role and function** of the decision instrument, and
- B) **when and how to use it** in the process of assessing events.

This guidance and the instrument itself are primarily designed for use by the NFPs and other national level public health professionals involved in the identification, assessment and reporting of events within the national system and in international notification to WHO. This guidance may also be valuable in providing a better understanding of States Parties' obligations under the Regulations for the different sectors involved in the implementation of the IHR (2005) at national level.

Official event-related communications under the IHR (2005) are carried out between the NFP and the WHO IHR Contact Point by the most efficient means of communication available. Both the NFP and WHO Contact Point are officially designated and required to be available on a 24 hour a day and 7 days a week basis. Whilst NFPs are responsible for notification, they will not necessarily be responsible for actually carrying out the assessment of events and public health risks. Guidance for the designation or establishment of NFPs, including terms of reference and an explanation of their core functions, is provided in the **National IHR Focal Point Guide** (<http://www.who.int/csr/ihr/nfp/en/index.html>).

The IHR (2005) specify different ways in which States Parties can initiate event-related communications with WHO. Notification is one component of a collaborative process between States Parties and WHO; this process includes the detection, (joint) risk assessment of and the potential response to public health risks. WHO considers a communication as a notification when it is specified as such by the reporting State Party, assuming an assessment is made by the country using the decision instrument. For events not requiring formal notification to WHO, particularly when information is not sufficient enough to complete a definitive assessment with the decision instrument, States



Parties may nevertheless consult WHO (under Article 8) and seek advice on evaluation, assessment and appropriate health measures to be taken. Irrespective of the type of communication, WHO's ability to effectively support States Parties in responding to public health risks and emergencies is critically dependent on the timeliness in sharing information.

### 3. Scope for notification under the IHR (2005)

Under the IHR (2005), notification is based on the assessment by a State Party of an "event" within its territory "that may constitute a public health emergency of international concern". While notification under the previous International Health Regulations (1969) focused only on 3 "quarantinable diseases", the obligation to notify WHO under the IHR (2005) is therefore much broader and covers a wide range of potentially international public health risks, be they communicable diseases, "contaminated" food (substance or microbial contamination), chemical contamination of products or the environment, release of radio nuclear material, or other toxic release.

The definitions of "event" and "disease" in the IHR (2005) are the building blocks of the expanded surveillance and notification obligations for States Parties. The term "event" is defined as "a manifestation of disease or an occurrence that creates a potential for disease". "Disease" means "an illness or medical condition that presents or could present significant harm to humans, irrespective of origin or source".

Accordingly notification may be required for:

- Events, irrespective of their origin or source, including those caused by biological (of infectious or non-infectious nature) chemical agents or radio nuclear materials;
- Events where the underlying agent, disease or mode of transmission is new, newly-discovered or as yet unknown at the time of notification;
- Events involving transmission or potential transmission through persons, vectors, cargo or goods (including food products) and environmental dispersion;
- Events that carry potential future impact on public health and require immediate action to reduce the consequences;
- Events arising outside of their known usual occurrence patterns.

As mentioned above, such potentially notifiable events extend beyond communicable diseases and address concerns like contaminated food or other products including pharmaceuticals, and the environmental spread of toxic, infectious material or other contaminants. With respect to pharmaceutical products, it is important to emphasize that the notification obligations under the IHR (2005) do not seek to replace the existing pharmaco-vigilance systems and other activities relating to the detection, assessment and prevention of adverse effects of medicines.

The IHR (2005) do not require that the event under assessment involve a particular disease or an agent or even that the agent are known, nor do they exclude events based upon whether they may be accidental, natural, or intentional in nature. The broadened scope and the shift from the previous disease list to the paradigm of event based notification require an informed judgment according to the circumstances in which an event occurs.

It should be noted that this broad scope also applies in the context of two other types of reporting by States Parties to WHO: consultations (Article 8) and responses to WHO requests for verification (Article 10) of reports it has received concerning events within that State Party's territory. The

verification requirement and consultation option may also involve events that originate from biological, chemical or radio nuclear hazards or from unknown etiology at the time of consultation or verification request.

## 4. Overview: Role and function of the decision instrument

### 4.1. Role and structure of Annex 2

Annex 2 establishes the necessary criteria for States Parties to decide whether or not an event needs to be notified to WHO under the IHR (2005). The purpose of Annex 2 is to increase sensitivity and consistency of the notification process in the face of users' variable experience, knowledge and perception, to capture as many relevant events as possible globally. Following the assessment, if States Parties remain uncertain regarding the need to notify WHO they are advised to consider the option of consulting the organization as previously described.

Annex 2 comprises two basic parts: page one, the **decision instrument or algorithm** that directs the user in the assessment of an event; and subsequent pages that contain particularized **questions and examples** of contexts in which these criteria may arise. The further specific questions and examples in Annex 2 guide the State Party in the assessment process as the four criteria are fairly broad.

With reference to the different parts of Annex 2, in this guide the following definitions are used:

**Table 1.** Definitions of the terms "criteria", "questions" and "examples".

Term	Definition
Criteria	Four decision boxes and numbered in Roman numerals (I-IV) in Annex 2
Questions	The questions are in Italics and numbered from 1 to 11 with Arabic numerals in Annex 2
Examples	Examples are the bullets marked with a check mark appearing under some of the questions

### 4.2. Events requiring notification

Under the decision instrument there are two basic categories of events which must be notified:

- A) **all events that fulfill any two of four situational public health criteria specified below.** Within this first category, events involving certain diseases must always be assessed against these criteria (see list below). The need to notify such events will depend upon the outcome of the assessment.

- B) **any event involving one or more cases of four specific diseases (Small pox, SARS, Human Influenza caused by a new subtype, Poliomyelitis due to wild-type poliovirus),** irrespective of the context in which they occur, because they are by definition unusual or unexpected and may cause serious public health impact.

#### **4.3. Public health criteria for assessment using the decision instrument**

Whether an event is notifiable under the first category depends on a State Party's assessment using the following four essential and mandatory criteria:

- 1. Is the public health impact of the event serious? (yes/no)**
- 2. Is the event unusual or unexpected? (yes/no)**
- 3. Is there any significant risk of international spread? (yes/no)**
- 4. Is there any significant risk of international travel or trade restrictions? (yes/no)**

#### **4.4. Timing of assessment and notification**

Within a State Party all public health events which may meet any one of the four criteria have to be assessed for potential notification within 48 hours of the State Party becoming aware of it at the national level.<sup>1</sup> This regular and routine assessment of national events should be based upon the public health information available and the application of established epidemiological principles by experienced public health professionals. The same event may be reassessed over time as necessary as further relevant information about the event becomes available. If a State Party assesses an event and finds it notifiable using the decision instrument, it is required to notify it within 24 hours to the WHO IHR Contact Point, and through the State Party's NFP. Where an initial assessment of an event is negative but a subsequent assessment meets the notification requirement, then it has to be notified to WHO within 24 hours following this positive re-assessment.

The decision instrument is designed to be sensitive enough to minimize the risk that a public health event with serious international implications be notified too late for a critical early assessment and response that could contain the event before it spreads internationally. For this reason, there is no automatic publication with respect to notifications under the IHR (2005); it is the starting point for a dialogue between WHO and the notifying State Party on further event assessment, potential investigation and any appropriate public health response measures.

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<sup>1</sup> The obligations to develop the public health capacities to detect, assess, respond to, and internally report public health events - and to report as required to WHO - are contained in Annex 1A. Under paragraph 6(a) of Annex 1A, States Parties are required to have and strengthen capacities to assess at the national level all domestic reports of urgent events within 48 hours.



## 5. Assessment of events according to the decision instrument

### 5.1. Notifiable events

The decision instrument classifies the notification of events into the above mentioned two basic categories.

The **first category of notifiable events** are those which fulfill any two of the four situational public health criteria. Consequently, all domestic public health events which may fulfill any of these criteria should be assessed using the decision instrument, including those where the cause or origin has yet to be identified.

Moreover, Annex 2 provides in the upper right box that events involving certain epidemic prone diseases must always be assessed using the decision instrument to see if any two of the four assessment criteria are fulfilled, and therefore require notification of the event: Cholera, pneumonic plague, yellow fever, viral haemorrhagic fevers (Ebola, Lassa, Marburg), West Nile fever and other diseases of special national or regional concern, e.g. dengue fever, Rift Valley fever and meningococcal disease. During the revision process, this list was purposefully left open to add additional diseases of national or regional concern. Unlike the second category of diseases, the mere presence of cases of these diseases does not automatically require notification or automatically fulfill any of the four criteria.

The **second category of notifiable conditions** comprises those events involving one or more cases of four critical diseases, listed in the box at the upper left corner of the decision instrument on page one of Annex 2: **smallpox, poliomyelitis due to wild type poliovirus, human influenza caused by a new subtype and severe acute respiratory syndrome (SARS)**. These four infectious diseases have been established as being unusual or unexpected and may have serious public health impact. For this reason, even a single case of these four disease entities (as defined in WHO case definitions) must always be notified to WHO, irrespective of the context in which they occur. For events involving suspected cases of the four notifiable diseases (e.g. in the absence of laboratory confirmation of cases suspected for smallpox), States Parties must conduct an assessment of such events according to the decision instrument criteria, and then eventually notify WHO of all qualifying events within 24 hours of the assessment.

### 5.2. Assessment criteria and specific guidance in Annex 2

With the exception of cases of the four designated diseases, the decision whether or not an event must be notified to WHO requires an understanding by the user of four public health criteria (see table one).

**Criterion 1: Serious public health impact** weighs both the immediate and potential future consequences of an event on the health of human populations.

**Questions** that should be considered when assessing an event against this criterion:

- Is the number of cases and/or number of deaths for this type of event large for the given place, time or population?
- Has the event the potential to have a high public health impact?
- Is external assistance needed to detect, investigate, respond to or control the current event, or prevent new cases? (This includes inadequate human, financial, material or technical resources).

If the answer to any of these questions is affirmative, the first criterion should be deemed fulfilled for purposes of the decision instrument.

**Examples** of specific circumstances that contribute to a high public health impact include:

- Pathogen with high potential to cause an epidemic
- Indication of treatment failure, e.g. an infection that used to be treatable and is now not responding to commonly available antimicrobial agents
- Significant public health risk even if no or few human cases have been identified
- Cases among health staff
- Population at risk is especially vulnerable, e.g. refugees and internally displaced persons (IDPs)
- Factors that may hinder or delay public health response (war, disasters, weather, multiple foci)
- Area with high population density
- Spread of toxic, infectious or otherwise hazardous materials naturally or otherwise (potentially) contaminating a population or large area

**Criterion 2: Unusual or unexpected** nature of the event seeks the atypical character of an event within the epidemiological context.

**Questions** to be considered include:

- Is the event unusual, such as involving unusual aspects or features of an event which may be of special public health concern or cause for alarm?
- Is the event unexpected from a public health perspective?

As above, if an event is either "unusual" as described in this criterion, or the event itself "unexpected" from a public health perspective, then this second criterion should be deemed fulfilled for purposes of assessment and notification.

**Examples** that should be considered in this context include:

- Unknown causal agent, or an unusual or unknown source, vehicle or route of transmission (**unusual**)
- Evolution of cases more severe than expected or unusual symptoms (**unusual**)
- Event unusual for area, season, population (**unusual**)
- Disease/agent already eliminated or eradicated from State or not previously reported (**unexpected**)

**Criterion 3: Significant risk of international spread of disease** assesses if the event either presents significant risk of dissemination of disease across national borders, or if the disease has in fact already spread.

**Questions** to be considered under this criterion are:

- Is there evidence of an epidemiological link to similar events in other States?
- Is there any factor that should alert WHO to the potential for cross border movement of the agent, vehicle or host?

**Examples** that users of the decision instrument should also consider include these contexts in which this factor may typically arise:

- Where there is evidence of local spread, an index case (or other linked cases) with a history in the previous month of international travel, participation in an international gathering, or close contact with an international traveler or highly mobile population
- Event caused by environmental contamination with potential to spread internationally
- Event in area of intense international traffic with limited capacity for sanitary control, environmental detection or decontamination

**Criterion 4: Significant risk of international trade or travel restrictions** refers to the event's potential to prompt other States or entities to adopt measures that limit or ban trade or travel with the State(s) experiencing the event.

**Questions** to be considered under this criterion include:

- Have similar events in the past resulted in international restrictions?
- Is the source suspected or known to be a food product, water or any other goods potentially contaminated and that are imported/exported internationally?
- Is the event associated with an international gathering or areas of intense international tourism?
- Are there requests for information by foreign officials or international media?

## **6. Important considerations in the context of assessment and notification**

### **6.1. Considerations for the assessment process**

Utilization of the decision instrument based on the four criteria is not simply a mechanical process, but also requires the expert knowledge and experience of public health professionals concerning national disease patterns, epidemiological principles and other relevant subjects. Answering the specific questions and determining whether the criteria have been met requires an informed judgment on the part of the user, such judgment is always influenced by the users' particular experience, knowledge and perception.

The four criteria in the decision instrument are “situational criteria”, meaning that the assessment of an event against the criteria should take into account the specific time, place, population and other important contextual elements in which the event is occurring. It follows that the public health risk from a case of a given disease may be assessed differently in another location or at another time. New information and developments in the event should prompt a reassessment if the initial assessment did not result in notification of the event. With additional information, the event may then become notifiable. It should be noted that such developments would also include changes in the situational context as well as the epidemiological characteristics of the event. For example, heightened interest in the event by foreign officials or international media might change the assessment, particularly with respect to criterion four.

### **6.2. Considerations for notification**

In order to carry out a collaborative assessment between the notifying State Party and WHO notifications must always include or be followed by ongoing communication of accurate and sufficiently detailed public health information on the event in accordance with Article 6.2. This information may include, where possible, case definition, laboratory results, source and type of the risk, number of cases and deaths, conditions affecting the spread of the disease, the health measures employed and any difficulties faced or support needed in responding to the event. As the event unfolds, more information may become available and the dialogue with WHO should include this new information.

Notification to WHO is part of the global early warning function the purpose of which is to provide international support to affected countries and information to other countries if needed. Notification will be associated with the following consequences, all of which intend to benefit WHO Member States:

#### **1. Joint risk assessment with and offer of assistance by WHO to the notifying State Party**

Under the IHR (2005), WHO must offer assistance to States Parties in assessing or controlling public health events occurring within their territories. This support can be in the form of technical advice and guidelines, specialized materials, deployment of international teams to affected areas and coordination

of international support from various sources. By virtue of its privileged access to national health authorities and institutions world-wide, WHO can bring the best technical skills to help manage public health threats quickly and effectively.

## **2. Provision of event related information to all States Parties**

WHO seeks to manage event-related information in a responsible way in order to protect affected countries from any unjustified over-reaction by other countries. At the same time, WHO is obligated to provide event information to States Parties regarding public health risks whenever that information is necessary for them to protect their populations. States Parties should be aware that when WHO receives information on an event such information is not made generally available to other countries unless circumstances arise that justify dissemination in order to address the risk of international spread (Article 11). The context that justifies communication of the information to other States Parties include situations where the international spread of the public health risk is inevitable based on the evidence and known circumstances. When WHO intends to make such information available to other States Parties, it has an obligation to consult with the country experiencing the event. WHO may also make information available to the public, if other information about the event is already in the public domain, and if a need exists for public availability of information that is authoritative and independent.

## **3. Determination of a public health emergency of international concern**

The IHR (2005) provide the regular framework for the timely and effective management of a broad spectrum of international public health risks. However, there are some rare events of particular importance for which the Regulations provide a basis for collective global action. Such serious events that endanger global public health are specified by the Regulations as public health emergencies of international concern. The term "Public Health Emergency of International Concern" (PHEIC) is defined in the IHR (2005) as "an extraordinary event which is determined to constitute a public health risk to other States through the international spread of disease and to potentially require a coordinated international response". This definition implies a situation that is serious, sudden, unusual or unexpected, that carries implications on public health beyond one's national border and that may require immediate international action.

The responsibility of determining whether an event falls into this category lies with the Director-General of WHO and requires the subsequent convening of a committee of health experts - the IHR Emergency Committee. This committee advises WHO on the recommended measures to be promulgated on an emergency basis. It also gives advice on the determination of the event as a PHEIC in circumstances where there is inconsistency in this regard between the assessment of the Director-General and that of the affected country/ies. The Emergency Committee continues to advise the Director-General throughout the duration of the PHEIC, including advising on necessary changes to the recommended measures for control and on the termination of the PHEIC.

It is important not to equate notification with the very rare situation of a PHEIC since the vast majority of events assessed as requiring notification to WHO will not ultimately be determined to be PHEICs. The early notification of events fulfilling the decision instrument criteria is however essential to address those frequent events effectively under the solid framework of the IHR (2005); it is also essential to prevent the spread of disease across international borders.

## 7. Illustrations of the use of the decision instrument in selected case scenarios

In the following case scenarios, the four decision instrument criteria are tested against the description and potential implications of fictional events, while applying established epidemiological and public health principles. These examples illustrate that disease outbreaks or public health hazards detected by a State Party must be coupled with the context in which they occur to decide whether the event fulfils any two of the four assessment criteria and hence whether it must be notified to WHO or not. While helping to illustrate different kinds of events embedded in particular circumstances that would either lead to notification or not, it is in no way an exhaustive list of probable scenarios.

**Table 2. Overview of case scenarios used for the application of the decision instrument**

No.	Case scenario	Page
1.	Outbreak of cholera	19
2.	Potential exportation of cholera cases	21
3.	Toxic chemical spill	22
4.	Meningitis outbreak	24
5.	E. coli 0157:H7 in spinach	25
6.a)	Bubonic plague - part one	27
6.b)	Bubonic plague - part two	29
6.c)	Bubonic plague - part three	30
7.	Outbreak of unknown etiology	32
8.	Cutaneous anthrax in laboratory	34
9.	Outbreak of typhoid fever in endemic area	35
10.	Measles at an international athletics competition	37
11.	Cases of clinically suspected smallpox	39
12.	Fatal cases associated with yellow fever vaccine	41
13.	Hazardous toy	42
14.	Dengue Outbreak	44
15.	Outbreak of Rift Valley Fever	45



16. Radiopharmaceutical facility accident

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### **Case scenario 1: Outbreak of cholera**

*An outbreak of cholera erupted in a remote municipality with 180,000 inhabitants in the centre of Country A. First cases were laboratory confirmed 2 weeks ago. Within the last three days only, 220 new suspect cases of cholera have been reported. Currently, 45 severe cases with laboratory confirmed *Vibrio cholerae* serogroup O1 biotype El Tor sensitive to Doxycycline are being treated at the isolation unit of the district hospital. In total, 4 deaths attributed to this cholera outbreak have been recorded. All the cases have been from this rural municipality with poor sanitation services. The cases have been attributed to recent rains setting in with human waste and other materials being washed into existing water sources leading to widespread contamination and environmental pollution. In response, chlorinated water supply and improved sanitation facilities are being established by public health workers in the affected municipality. Cholera is a reoccurring problem in the affected area, especially during the rainy season, resulting sometimes into case fatality rates higher than 2%.*

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**Under the IHR (2005), the presence of any two of the four criteria provided in the decision instrument of Annex 2 means that the event needs to be notified. While using the decision instrument, please answer the following questions:**

**1. Is the public health impact of this event serious?** **Yes**

Factors indicating a serious public impact of the event:

- Insufficient sanitation capacities and the event's rural location may hinder or delay the public health response.
- The highly infectious pathogen has the potential to contaminate a large population in the municipality.
- External assistance may be required to control the event.

**2. Is the event unusual or unexpected?** **No**

Factors indicating that the event is neither unusual nor unexpected:

- The event is caused by a known agent that occurs usually in that area on a seasonal basis. Contaminating source and mode of transmission causing this cholera outbreak are also known.
- The case fatality rate of about 2% is high but not unusual for seasonal cholera outbreaks for the given area.
- The occurrence of the event itself is not unusual for the area and season, especially since flooding coupled with poor sanitation and hygiene potentiates the spread of water-borne diseases like cholera.

**3. Is there a significant risk of international spread? No**

Factors indicating that international spread is unlikely:

- No other cases have been reported outside of this remote municipality.
- The scenario does not indicate international travel of cases or contact of cases or other highly mobile people.
- It is unlikely that the waterborne agent of this event affects international waterways.

**4. Is there a significant risk of international trade or travel restrictions? No**

Factors indicating that the adoption of trade or travel restrictions is unlikely:

- No pointer to the export of food products potentially contaminated with *Vibrio cholerae* El Tor, nor to intense human traffic or interest from external media and/or officials regarding this event.

**Based on the existing information, this cholera outbreak meets only one of the four criteria of the algorithm in Annex 2, and thus does not need to be notified under Article 6 of the IHR (2005).**

**Learning Points:**

1. Cholera is one of the epidemic prone diseases appearing in the upper right box that will always lead to utilization of the decision instrument to see if any two of the four assessment criteria are fulfilled.
2. The occurrence of a serious disease such as cholera does not necessarily constitute an unusual public health event or an actual risk to international spread.
3. The epidemiological context and risk of international spread posed by a disease event are important determinants of a potential public health emergency of international concern. Consequently, the public health assessment of the event must be coupled with circumstances, such as place (e.g. proximity to an international border or an airport), time, size of outbreak, as well as clinical and epidemiological characteristics of the pathogen.
4. Though an event might be assessed as not being notifiable there could be nevertheless good reasons for consulting WHO (e.g. limited local capacities, specific vulnerability of the population).

## Case scenario 2: Cholera outbreak in a different setting

12 tourists become ill with acute gastrointestinal symptoms just prior to departing Country B. They had all been staying at the same popular tourist resort hotel from where they attended several organized group tours and excursions. *Vibrio cholerae* serogroup O1 was identified in the stool of six of these patients. Health authorities in Country B suspect a contaminated seafood salad as the source of infection. All symptomatic tourists consumed a seafood salad during a boat trip. During the previous years, sporadic cases of cholera have occurred in Country B but no epidemics. Country C has just reported to WHO two likely imported cholera cases in persons who have just returned from Country B.

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**Under the IHR (2005), the presence of any two of the four criteria provided in the decision instrument of Annex 2 means that the event needs to be notified. While using the decision instrument, please answer the following questions:**

**1. Is the public health impact of this event serious? No**

Factors indicating that a serious public impact of the event is unlikely:

- The number of cases caused by this cholera event is not large for the Country B.
- Though cholera has the potential to have a serious public health impact even if very few human cases have yet been identified, the event's circumstances minimize this likelihood in the given scenario.

**2. Is the event unusual or unexpected? Yes**

Factors indicating that the event is either unusual or unexpected:

- Though the event is caused by a known agent from a likely common source, the infection of a large group of tourists is very unusual.

**3. Is there a significant risk of international spread? Yes**

Factors indicating that international spread is likely:

- Evidence of an epidemiological link to similar events in other States exists.
- Given the recent stay of the cases at a popular tourist location and likely common source exposure, the risk of international spread from returning tourists is real.

**4. Is there a significant risk of international trade or travel restrictions? Yes**

Factors indicating that the adoption of trade or travel restrictions is likely:

- Implications on international travel are possible since the event has occurred in an area of intense international tourism activities.
- Though not specifically mentioned in the scenario, the contaminated seafood might have been exported to other countries.

**Based on the existing information, this cholera outbreak meets two or more of the four criteria of the algorithm in Annex 2, and thus needs to be notified under Article 6 of the IHR (2005).**

**Learning Points:**

1. Cholera is one of the diseases that will always lead to utilization of the decision instrument. However events involving cholera or any other disease that require to be assessed do not necessarily have a serious character in the context of the given geography, population at risk and season.
2. The potential or actual export of even very few cases or their contacts present a risk of international disease spread.
3. In previous years, news of a disease outbreak in an area of intense international traffic have, often unjustified, led to restrictions of international trade and/or travel by other countries. Today, such restrictions need to comply with the IHR (2005).

### **Case scenario 3: Toxic chemical spill**

*Following an industrial accident in City D, 100 tons of benzene have spilt into a major river. This is the first time this type of accident has occurred in this area. The river is a main source of drinking water for both City D and also three other major cities in a neighboring country downstream of the river. Benzene is a known human carcinogen. Authorities in City D have shut off drinking water supplies to residents in response and alternative water resources are being mobilized. However decontamination efforts have been limited due to a lack of equipment and expertise.*

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**Under the IHR (2005), the presence of any two of the four criteria provided in the decision instrument of Annex 2 means that the event needs to be notified. While using the decision instrument, please answer the following questions:**

**1. Is the public health impact of this event serious? Yes**

Factors indicating a serious public impact of the event:

- The event has potential acute health consequences because of: (i) consumption of contaminated drinking water and possibly food (e.g. fish); (ii) lack of water for consumption and hygiene; and (iii) poor water quality of alternative water. In addition, the event might have serious consequences on human health in the future because of delayed health effects of chemical exposures.
- The nature of exposition to this specific chemical agent may result in high proportion of severe cases
- The event has resulted in toxic contamination of a large geographical area with a high population density. Chemical might enter into the food chain.
- Inadequate existing response capacity requires external assistance to respond to the event (including laboratory support, exposure modeling, risk assessment and management).

**2. Is the event unusual or unexpected? Yes**

Factors indicating that the event is unusual or unexpected:

- This massive and wide-reaching environmental contamination with a chemical agent known to be carcinogen is relatively rare.

**3. Is there a significant risk of international spread? Yes**

Factors indicating that international spread is likely:

- Transboundary spread of the contaminant via the river to downstream cities in a neighboring country might have already happened or appears very likely. Contaminated food (e.g. fish) might be traded internationally.

**4. Is there a significant risk of international trade or travel restrictions? Yes/No**

Factors indicating that the adoption of trade or travel restrictions is unlikely:

- Only if contaminated food is traded internationally.

**Based on the existing information, this chemical event meets two or more of the four criteria of the algorithm in Annex 2, and thus needs to be notified under Article 6 of the IHR (2005).**

**Learning points:**

1. Notifiable events can extend beyond communicable diseases and may arise from biological and chemical agents or radio nuclear materials.
2. The seriousness of an event can be determined by its acute and delayed public health consequences. The assessment of the IHR notification obligation has therefore to consider whether an event carries a potential for future impact on public health and requires immediate action to reduce the potential consequences. For this example, assistance from WHO and other international partners might be requested, depending on existing national chemical emergency response plans and capacities.
3. The potential exportation of a public health hazard across international borders is a major concern.

#### **Case scenario 4: Meningitis outbreak**

*Within the last two weeks, the National Institute of Public Health in Country E was informed that 105 patients with meningitis, mainly children and young adults from a suburb in City F, were hospitalized in several hospitals. 14 of these patients died after admission. Neisseria meningitis was isolated from cerebrospinal fluid and blood in several patients, and the serogroup has been serologically classified as type A by a conventional bacterial agglutination test.*

*During the past 24 hours, more than 400 geographically clustered patients with acute neurological syndrome were recorded in several district hospitals surrounding City F. A rapid investigation in the City F and 4 other affected districts indicates a substantial increase in the number of cases per week. Because of the rapid progression of the meningitis outbreak, the reporting system has broken down in some affected districts, making it difficult to assess the true attack rate and geographical size of the outbreak. Notably, Country E is considered part of the African meningitis belt, and one of the affected districts is adjacent to Country G that accommodates a refugee camp with highly mobile inhabitants. In addition, the national stockpile for meningococcal vaccine and related resources to launch an extensive immunization campaign are very limited.*

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**Under the IHR (2005), the presence of any two of the four criteria provided in the decision instrument of Annex 2 means that the event needs to be notified. While using the decision instrument, please answer the following questions:**

**1. Is the public health impact of this event serious?** **Yes**

Factors indicating a serious public impact of the event:

- The event is caused by a pathogen with high potential to cause an epidemic.
- The substantial increase of cases in the event, the number of fatal cases since onset of the outbreak, the high population density and potential involvement of a highly susceptible refugee population might have a serious public health impact.
- Insufficient surveillance capacities may hinder or delay the identification of the epidemic threshold for mass vaccination.
- In view of the rapidly evolving outbreak and the lacking availability of vaccines and supportive equipment (logistics) in the country for a timely response, external assistance for public health investigation and response may be required.

**2. Is the event unusual or unexpected?** **No**

Factors indicating that the event is neither unusual nor unexpected:

- The event is caused by an endemic disease occurring in annual cycles in countries belonging to the meningitis belt.

**3. Is there a significant risk of international spread?** **Yes**

Factors indicating that international spread is likely:



- The risk of epidemics in the border areas of neighboring countries is increased because of similar environmental, climatic and bacteriological factors. The presence of a highly susceptible refugee population increases this risk.

**4. Is there a significant risk of international trade or travel restrictions? No**

Factors indicating that the adoption of trade or travel restrictions are unlikely:

- No precedent for international restrictions to be imposed. However, travelers to the area should be advised to be vaccinated against meningococcal disease and to avoid overcrowded places.

**Based on the above information, this meningitis outbreak meets two or more of the four decision instrument criteria, and thus needs to be notified under Article 6 of the IHR (2005).**

**Learning Points:**

1. Meningococcal disease epidemics will always lead to utilization of the decision instrument.
2. An event with epidemic potential may pose a serious public health risk if the national capacities are not sufficient to respond and control it, and, as a result, external assistance is needed. The adequacy of the available resources (human, technical, financial) has to be determined in relation to the assessed event.
3. Geographical circumstances such as proximity to an international border might indicate the risk that the same event occurs in a neighboring country.

**Case scenario 5: E. coli O157:H7 in spinach**

*In the highly industrialized Country H a total of 72 geographically widespread cases have Escherichia coli serotype O157:H7 infections with bloody diarrhea in relation to the consumption of fresh, bagged spinach in a timeframe of one week. Of the 63 hospitalized cases 7 patients developed hemolytic uremic syndrome (HUS) leading to the death of one child. E. coli O157:H7 with indistinguishable PFGE patterns were isolated from spinach samples and stool cultures of cases. The spinach product has been distributed nationwide and to five other countries. An additional country received the product through secondary distribution. Infection control measures for cases and their contacts have been applied, and a prompt recall of all the contaminated food products, has been issued to prevent further primary infection.*

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**Under the IHR (2005), the presence of any two of the four criteria provided in the decision instrument of Annex 2 means that the event needs to be notified. While using the decision instrument, please answer the following questions:**

**1. Is the public health impact of this event serious? Yes**

Factors indicating a serious public impact of the event:

- The pathogen causing this event has a high potential to have a serious impact because of a strong aetiological association with HUS (in up to 10% of patients, particularly young children and the elderly).
- The broad geographical distribution (multiple foci) of the highly infectious pathogen through the contaminated food product has the potential to have a high public health impact in Country H.

**2. Is the event unusual or unexpected?** No

Factors indicating that the event is neither unusual nor unexpected:

- The occurrence of clusters of cases with *Escherichia coli* serotype O157:H7 infections is neither unusual nor unexpected. The pathogen is transmitted mainly through consumption of contaminated foods. The presence of enterohemorrhagic *E. coli* O157:H7 in food products is a known problem.
- The clinical evolution of cases is not more severe than expected for an event involving *E. coli* O157:H7.

**3. Is there a significant risk of international spread?** Yes

Factors indicating that international spread is likely:

- The scenario indicates that export of the contaminated food product already occurred.

**4. Is there a significant risk of international trade or travel restrictions?** Yes

Factors indicating that the adoption of trade or travel restrictions is likely:

- Similar events in the past have resulted in importing countries imposing trade restrictions to avoid importation of contaminated food products.
- Presence of contamination on the exported product may result in trade restrictions.

**Based on the existing information, this outbreak of *E. coli* O157:H7 meets two or more of the four criteria, and thus needs to be notified under Article 6 of the IHR (2005).**

**Learning Points:**

1. Certain food safety-related public health events, including both food contamination and foodborne disease events, can have a high public health impact and international implications requiring notification and reporting under the IHR (2005).
2. Food safety events involving the international import/export of event-related goods have a significant risk of resulting in international restrictions on trade.
3. Beyond the lessons learned from this scenario, food safety events that require notification or reporting to WHO may relate to any of the three hazards which can occur in food: chemical, physical (sometimes known as foreign matter) and microbiological.

## Case scenario 6: Outbreak of plague - part one

National authorities in Country J received reports of a suspected outbreak of bubonic plague from an area of the central highlands where housing and sanitation conditions are poor. The outbreak involving 68 clinically suspected and 12 presumptive<sup>2</sup> cases of bubonic plague started a few days after heavy rains occurred. The clinical picture includes sudden onset of high fever, general malaise, severe prostration with headache, and tense cervical, axillary or inguinal buboes. The symptoms among three patients, of which one died, indicate septicemic plague. However, no evidence suggests the manifestation of secondary pulmonary plague.

Due to the delay between the collection of the samples and their arrival at the reference laboratory in Country J, *Yersinia pestis* could not have been confirmed. Although plague has not been established yet as the definite cause of this outbreak, local health-care providers started antibiotic treatment with streptomycin after laboratory specimens were taken. In addition, public health education about how to avoid exposure to disease-bearing animals and their fleas has been issued for the general public. Local public health authorities and doctors are familiar with diagnosis, prevention and treatment of plague since bacteriologically confirmed or presumptive human cases (≈300/year) of bubonic plague occur annually in this enzootic area during the rainy tropical summer season.

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**Under the IHR (2005), the presence of any two of the four criteria provided in the decision instrument of Annex 2 means that the event needs to be notified. While using the decision instrument, please answer the following questions:**

**1. Is the public health impact of this event serious?** No

Factors indicating that a serious public impact of the event is unlikely:

- The number of cases caused by this bubonic plague event is not elevated for the given place and the evolution of this outbreak does not indicate a serious public health impact, so far.
- The public health authorities responded appropriately to this event by early treatment of cases and by promptly disseminating information about the outbreak of plague.
- However, right after the detection this event had the potential to cause a serious public health impact since the natural course of bubonic plague can lead to secondary pneumonic plague. In addition, given the lack of bacteriologic confirmation, clinical diagnosis alone is not always straightforward for the identification of patients with bubonic or pneumonic plague, potentially leading to underestimation of the seriousness. Therefore, at that stage of first risk analysis, Country J might have faced difficulties to complete a definitive assessment with the decision instrument. As a consequence, national authorities could have then decided to start a confidential consultation with WHO, as provided by Article 8 of the Regulations, and to seek advice on evaluation, assessment and appropriate health measures to be taken.

**2. Is the event unusual or unexpected?** No

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<sup>2</sup> Detection by microscopy of gram-negative bacillus with morphologic patterns of *Yersinia pestis*

Factors indicating that the event is neither unusual nor unexpected:

- The event is caused by a known agent for which Country J has a known enzootic reservoir. The occurrence of human cases of bubonic plague in an enzootic region is therefore not unusual, nor is it unexpected.

**3. Is there a significant risk of international spread? No**

Factors indicating that international spread is unlikely:

- The event does not involve factors that make cross border spread likely.

**4. Is there a significant risk of international trade or travel restrictions? Yes**

Factors indicating that the adoption of trade or travel restrictions are likely:

- In 1994, the epidemic of plague (bubonic and pneumonic) in India showed what impact the media can have. The international reaction was very intensive though the outbreak remained limited as a result of rapid interventions. Several countries closed their borders to travelers from India, some airline companies cancelled all flights from India, and also trade embargoes were declared. Though this event does not encompass cases of pneumonic plague or any other characteristics that would justify any embargo of international travel or of imports of goods from Country J, the significant risk of those travel and trade restrictions as an overreaction can not be excluded.

**Based on the existing information, this plague outbreak meets only one of the four criteria of the algorithm in Annex 2, and thus does not need to be notified under Article 6 of the IHR (2005).**

**Learning Points:**

1. An event that potentially has a fulminant public health impact can evolve in a way that offsets its actual public health significance. The assessment of possibly notifiable events has to take into account the situational and operational context in which an event occurs. This also includes the analysis of national capabilities to respond to an event under assessment.
2. States Parties have an explicit opportunity to initiate a "consultation" with WHO to determine an appropriate response for events not requiring formal notification, or where information is insufficient to complete the decision instrument at the time of initial assessment. This consultation process allows States Parties to keep WHO informed and to have a confidential dialogue (similarly to notification) with WHO on further event assessment and any appropriate investigative or response measures. In addition, if an affected State can point out in relation with media to the fact that it is working in collaboration with WHO on a disease related event, then overreaction is not likely to occur.
3. Despite lacking evidence indicating international concern for transboundary transmission, certain disease outbreaks are perceived per se as global microbial threats and lead, though unjustified, in many instances to restrictions of international travel and/or trade.

### **Case scenario 6: Outbreak of plague - part two**

*After the laboratory confirmation of this controlled outbreak of bubonic plague, all *Y. pestis* isolates were screened for their in-vitro susceptibility to antimicrobial agents which are most commonly used for plague treatment. From one patient who presented with symptoms of bubonic plague a multidrug-resistant strain was detected. This wild-type strain was resistant not only to all the first-line antimicrobial drugs recommended for therapy and prophylaxis of plague, but also to antibiotics that may represent alternatives to classic therapy. For the last 10 days, no further cases of bubonic plague occurred in Country J.*

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**Under the IHR (2005), the presence of any two of the four criteria provided in the decision instrument of Annex 2 means that the event needs to be notified. While using the decision instrument, please answer the following questions:**

**1. Is the public health impact of this event serious? Yes**

Factors indicating that a serious public impact of the event is likely:

- The discovery of a multiresistant *Y. pestis* strain causes major public health concern, especially in a disease for which no vaccine exists. The fact that a strain of *Y. pestis* acquired under natural conditions a resistance indicates the potential for continued undetected circulation among the natural hosts followed by the re-occurrence of such an alarming event (i.e. human infection with resistant strain) with its possible implications for treatment, especially in a pneumonic outbreak.

**2. Is the event unusual or unexpected? Yes**

Factors indicating that the event is unusual or unexpected:

- Despite the fact that a multi-resistant strain was isolated once in Madagascar in 1997, *Y. pestis* is considered as being universally susceptible to antibiotics. Any new emergence of a multi-resistant strain is unusual.

**3. Is there a significant risk of international spread? No**

Factors indicating that international spread is unlikely:

- There are no indications for international spread.

**4. Is there a significant risk of international trade or travel restrictions? Yes**

Factors indicating that the adoption of trade or travel restrictions are unlikely:

- Though the scenario does not provide any details indicating the attention of international media, the risk of travel and trade restrictions cannot be excluded as seen during similar events (cf. India 1994).

**Based on the above information, this plague outbreak meets two or more of the four criteria of the algorithm in Annex 2, and thus needs to be notified under Article 6 of the IHR (2005).**

**Learning Points:**

- The appearance of multidrug resistance of a disease agent that involves an epidemic potential may have serious public health impact, even if multiresistance is suspected in a single case.

### **Case scenario 6: Outbreak of plague - part three**

*Two weeks after the detection of the suspected outbreak of bubonic plague in Province A described above, a total of 11 patients from Province B were suspected to have pneumonic plague, were isolated and treated with streptomycin, and reported to the national public health authorities in Country J. Since the early clinical symptoms of pneumonic plague are unspecific, pneumonic plague was not suspected until four patients had died and seven others were presenting with the same respiratory symptoms. The diagnosis of pneumonic plague was then ascertained from sputum samples by the rapid F1 dipstick assay and ELISA. In vitro testing showed susceptibility to antimicrobial agents.*

*Now, more than one week after the death of the index case, field epidemiological investigation and control measures have been initiated from the national level. The local public health infrastructure does not provide sufficient surveillance and laboratory systems, epidemiologic response capabilities, case management and infection control capacities. The epidemiological investigation revealed that the index case was a bubonic patient from the previous outbreak in the highlands (see outbreak of plague - part one) who travelled about 200 km to consult a traditional healer and died with a secondary pneumonic plague. The healer, his family, and a patient of the healer developed primary pneumonic plague. The other villagers became infected during their active participation in the funeral ceremonies. The local funeral practice includes the cleaning and kissing of human bodies. Outbreaks of pneumonic plague have never occurred before in Province B.*

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**Under the IHR (2005), the presence of any two of the four criteria provided in the decision instrument of Annex 2 means that the event needs to be notified. While using the decision instrument, please answer the following questions:**

**1. Is the public health impact of this event serious? Yes**

Factors indicating that a serious public impact of the event is likely:

- The number of cases associated with this outbreak of pneumonic plague is high for the given place.
- This event, even if only very few human cases have yet been identified, has the ability to cause a high public health impact because of the potential for spread, high mortality if cases are left untreated, the expected panic in the population and the amount of response measures needed by public health authorities. The late identification of pneumonic plague cases increases the risk of public health impact since the immediate application of the control measures are decisive in preventing an epidemic of pneumonic plague. Thus, additional cases must be expected.
- The inadequate public health infrastructure might hamper the control.

**2. Is the event unusual or unexpected? Yes**

Factors indicating that the event is unusual or unexpected:

- The occurrence of the event itself is unusual for the area.

**3. Is there a significant risk of international spread? No**

Factors indicating that international spread is unlikely:



- Noting the remote and circumscribed location of this event, there is no factor that implies the risk of cross border spread.

**4. Is there a significant risk of international trade or travel restrictions? Yes**

Factors indicating that the adoption of trade or travel restrictions are likely:

- As indicated in the first part, pneumonic plague is perceived by the public and some governments as a global threat for public health. However, in view of the epidemic potential and bearing the lasting impression of the Black Death in the Middle Ages in mind, international reactions are usually intense when an outbreak of pneumonic plague is discovered. Therefore, this event involves a significant risk of unjustified travel and trade restrictions imposed by other countries.

**Based on the above information, this plague outbreak meets two or more of the decision instrument criteria, and thus does need to be notified under Article 6 of the IHR (2005).**

**Learning Points:**

1. An event that at initial assessment was considered not to be notifiable can evolve over the coming days and weeks so that new assessments must be made, using the decision instrument criteria. And with additional information the event may then become notifiable. Knowing this possible evolution, preparedness for early detection and timely response is strongly recommended for the previous case scenario.
2. The timeliness of detection of and response to an event is an important consideration in assessing the immediate and potential future consequences of an event on human health and populations.
3. The impact of an event is also determined by concomitant issues which may delay or hinder an appropriate response such as geographic considerations or traditional burial habits.
4. Early notification will enable WHO to assess travel restrictions issued by other countries and provide appropriate recommendation for travelers going to and coming from the affected area.

## Case scenario 7: Outbreak of unknown etiology

*During the last four days, 23 cases of febrile encephalitis associated with respiratory illness (8 [35%] fatal) were reported to the Ministry of Health in Country L. The index case and eight additional cases occurred among abattoir workers of the same slaughterhouse, three cases are household members of one of those workers, and the other cases occurred among traders and customers exposed to cows and pigs at a cattle-market held 1.5 weeks ago. Meanwhile, two of the patients died; and two health-care workers caring for these fatal cases have also fallen ill. Concurrent with the human cases, illness and death occurred among swine from the same regions, 1-2 weeks before illness in humans. The disease in swine, which is so far of unknown etiology, is not well defined but appears to include rapid and labored breathing; an explosive nonproductive cough; and neurological changes, including lethargy or aggressive behavior.*

*All human cases have occurred in the two rural areas (of two distinct Provinces) and are primarily adult men who had histories of close contact with swine. Illness has been characterized by initial fever and headache, followed by mild blurred vision, generalized seizures and disorientation that can progress to a coma within 24-48 hours, as well as development of respiratory failure in some patients. Most cases became ill 6 to 10 days after their last known exposure to swine. Initially, Japanese encephalitis (JE) virus was considered the probable etiologic agent for this outbreak since specimens from one early patient tested positive for infection with JE virus. However, the predominance of cases in humans who had close contact with swine suggested the possibility of another causative agent which laboratory diagnosis, despite numerous testing, has not been able to reveal yet. An epidemiological outbreak investigation team started a study to identify the source of human infection, to define specific risk factors associated with illness in humans, and to determine the risk for human-to-human transmission.*

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**Under the IHR (2005), the presence of any two of the four criteria provided in the decision instrument of Annex 2 means that the event needs to be notified. While using the decision instrument, please answer the following questions:**

### **1. Is the public health impact of this event serious?**

**Yes**

Factors indicating a serious public impact of the event:

- The event is caused by an unknown pathogen which seems to have a high potential to cause a severe epidemic, in view of the relatively high number of cases and deaths since onset of the outbreak.
- It poses a significant public health risk since the definite source of infection (animal reservoir?); the infectivity among humans; possible routes of transmission; and the appropriate components of prevention and therapy (e.g. antiviral agents) are all still unclear. As a result, this event offers continuing opportunities for human infection with an obviously highly transmissible and pathogenic agent that might compromise control efforts.
- Cases reported among health-care personnel always represent a potentially serious public health event.
- The event has a great potential to impair effective control measures and external assistance may be required to further investigate the causal agent and control the ongoing event.

**2. Is the event unusual or unexpected? Yes**

Factors indicating that the event is unusual or unexpected:

- The event is caused by a yet unknown infectious agent of uncertain origin causing an unusual clinical picture.
- The occurrence of the event itself is unusual, i.e. a potentially new emerging disease.

**3. Is there a significant risk of international spread? No**

Factors indicating that international spread is unlikely:

- Though cross-border movement of healthy carriers or animals contaminated with this newly recognized pathogen can never be ruled out, there are no indications for the risk of international spread in this scenario.

**4. Is there a significant risk of international trade or travel restrictions? Yes**

Factors indicating that the adoption of trade or travel restrictions are likely:

- The potential involvement of animals as the source of human infection may lead to an importation ban by other countries.

**Based on the existing information, this outbreak meets two or more of the four criteria in the decision instrument, and thus needs to be notified under Article 6 of the IHR (2005).**

**Learning Points:**

1. Events with no or very few human cases yet identified may still represent a serious and notifiable public health event especially if associated with deaths in animals.
2. Cases among health-care workers should always prompt further investigation and indicate a potential high public health impact.
3. Events caused by unknown or unusual agent; source; route of transmission or vehicle may represent a potential public health emergency of international concern. Early consultation with WHO during an evolving outbreak of unknown origin is advised given the potential seriousness and lack of available information at this point.
4. The association of an event with food products potentiates the possibility of the imposition of trade restrictions.

## Case scenario 8: Cutaneous anthrax in laboratory

*A university hospital just reported one case of cutaneous anthrax in a worker at its laboratory. The lab worker presented with a painless ulcer on his right hand with surrounding vesicles along with massive edema and eschar formation accompanied by low-grade fever and sub-axillary lymphadenopathy. Skin lesion samples were sent to a specialized laboratory (with BSL-3 capability) for presumptive (by PCR) and for confirmatory (culture recovery) testing. PCR was positive. The patient is responding dramatically to the early course of ciprofloxacin administered right after the provisional diagnosis of cutaneous anthrax, and continued the treatment after proven susceptibility of the isolate; the patient's constitutional symptoms improved. Computed tomography of the chest was normal.*

*The epidemiologic and environmental investigation of this case indicated that the probable source of exposure was contact with contaminated surface of culture vials known to contain *B. anthracis* which the worker had handled without wearing gloves. Several vials containing *B. anthracis* had been stored in this laboratory freezer from investigation of a human cluster of cutaneous anthrax two years ago. A swab of the vial cap handled by the worker yielded a *B. anthracis* culture that was indistinguishable from the culture recovered from the patient's clinical specimen. For the case presented herein: there were no obvious links to any animal having tested positive; or any evidence for either naturally occurring or bioterrorism related anthrax during the identified timeframe of infection. Extensive environmental sampling from the patients' workplace (including the air filtration system), residence and travel destinations for the 60 days preceding symptom onset were negative for *B. anthracis* by PCR and conventional bacterial cultures. Nasal cultures taken from personal contacts and co-workers in the same workplace environment were also negative for *B. anthracis*. So far none of the other employees at the laboratory, who received immediate post-exposure prophylaxis, reported illness among themselves or their family members. Serologic studies for antibodies to *B. anthracis* among co-workers are planned.*

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**Under the IHR (2005), the presence of any two of the four criteria provided in the decision instrument of Annex 2 means that the event needs to be notified. While using the decision instrument, please answer the following questions:**

**1. Is the public health impact of this event serious? No**

Factors indicating that a serious public impact of the event is unlikely:

- The evolution of this event is not more severe than expected for cutaneous anthrax which is usually not a life threatening disease if treated adequately.
- Since the source of infection could be documented this event does not indicate the risk of further human infection with *B. anthracis*. In addition, anthrax is not very contagious among humans since the only potential for contagiousness exists through spore or organism-contaminated body fluids.

**2. Is the event unusual or unexpected? Yes**

Factors indicating that the event is unusual:

- Human cases of anthrax are unusual, especially if occurring in a laboratory setting.

**3. Is there a significant risk of international spread? No**

Factors indicating that international spread is unlikely:

- The event poses no risk of disseminating across national borders.

**4. Is there a significant risk of international trade or travel restrictions? No**

Factors indicating that the adoption of trade or travel restrictions are unlikely:

- There is no risk of imposition of trade or travel restrictions.

**Based on the existing information, this anthrax outbreak meets one of the four criteria of the algorithm in Annex 2, and thus does not need to be notified under Article 6 of the IHR (2005).**

**Learning Points:**

1. The occurrence of an event involving a disease of public health importance, such as anthrax which usually requires notification to national public health authorities, does not necessarily constitute a notifiable event under the IHR (2005).
2. This scenario underscores the importance of safe laboratory procedures and alert for the potential infection of laboratory workers routinely handling biohazardous materials.

**Case scenario 9: Outbreak of typhoid fever in endemic area**

*In Country O, engineers have been repairing water pipes in a densely populated city and have advised residents not to drink the water without first boiling it for the initial few weeks after the water service is restored. Despite these warnings there is a large outbreak of 600 cases of typhoid fever in the city. Residents from several suburbs have been infected and 14 people have died from the complications of the disease. Meanwhile, health officials have been testing the water supply which has now been deemed safe and the number of cases is rapidly declining. There are no reports of cases in neighboring cities. Typhoid fever is a commonly occurring disease in Country O.*

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**Under the IHR (2005), the presence of any two of the four criteria provided in the decision instrument of Annex 2 means that the event needs to be notified. While using the decision instrument, please answer the following questions:**

**1. Is the public health impact of this event serious? No**

Factors indicating that a serious public impact of the event is unlikely:

- The number of cases has already declined rapidly.
- Water supply has been deemed safe.

**2. Is the event unusual or unexpected?** No

Factors indicating that the event is neither unusual nor unexpected:

- The event is caused by a known agent from a known contamination source.
- The evolution of cases is not more severe than expected and the occurrence of the event itself is not unusual for the area.

**3. Is there a significant risk of international spread?** No

Factors indicating that international spread is unlikely:

- Local drinking water contamination is geographically restricted with low potential to spread across international borders.

**4. Is there a significant risk of international trade or travel restrictions?** No

Factors indicating that the adoption of trade or travel restrictions are unlikely:

- No precedent for international restrictions to be imposed. Travelers to the area should be advised to take necessary drinking precautions.

**Based on the existing information, this typhoid fever outbreak meets only one of the four criteria of the algorithm in Annex 2, and thus does not need to be notified under Article 6 of the IHR (2005).**

**Learning Points:**

1. Each event must be assessed on its own context and on new developments over time as in some instances it will hold significant public health risk and in other situations it will not. In this case scenario the event might have appeared more serious at the very outset before the cause has been rectified.
2. A large outbreak of an endemic disease in itself does not, in all circumstances, constitute a notifiable event if the disease course is not unusual and there exists capacity to respond to the event.
3. Though notification is not required, consulting WHO might be considered for WHO's assistance in managing the response

### **Case scenario 10: Measles at an international athletics competition**

*The MoH in Country N was notified of one confirmed and eighteen suspected measles cases among participants of an international athletics competition. The primary case was an athlete from Country P who developed fever and coryza one day before the opening ceremony, severe conjunctivitis and cough followed, then the onset of a rash. Transmission must have occurred during extensive mingling of athletes from Country P in the prodromal stage before the competition and at several occasions in the domed stadium during the event. Seven suspected secondary cases had their only potential exposure at the opening ceremonies. Three cases with prodromal measles symptoms were unrelated spectators sitting in the same section of the upper deck, more than 30m above the athlete's entrance. Among those potentially at risk for measles were approximately 600 athletes; 500 coaches and managers from 68 countries; an estimated 2500 volunteers and staff; international media; and approximately 80,000 spectators from numerous countries attending the competition. In essence, the outbreak investigation team identified numerous groups with probable measles exposure.*

*All cases with the clinical picture of acute measles infection have measles IgM antibody in their acute serum specimens (greater than or equal to 1:40 by indirect fluorescent antibody (IFA) test). Nine cases have documented histories of measles vaccination between 9 and 12 months of age. Following onset of the rash, all patients were isolated in their hotel rooms. As live-virus measles vaccine could not have been administered within 72 hours of the most intensive exposure, the local health authorities recommended the use of immunoglobulin for contacts with high risks of complications. Quarantine or closing of this event was not feasible and, because exposure had already occurred, may not have limited secondary spread. Last year, a total of 546 confirmed measles cases and 92% vaccination coverage among children were reported in Country N.*

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**Under the IHR (2005), the presence of any two of the four criteria provided in the decision instrument of Annex 2 means that the event needs to be notified. While using the decision instrument, please answer the following questions:**

**1. Is the public health impact of this event serious? Yes**

Factors indicating that a serious public impact of the event is likely:

- This event may represent a significant public health risk because of: the large-scale exposure to potentially susceptible persons gathered in a confined environment; the extreme infectiousness of the measles virus; the potential to generate serious measles illness; and the difficulty in obtaining timely evidence of measles vaccination from throughout the world.
- Though the high measles vaccination rate in Country N makes it unlikely that this event may cause high morbidity and/or mortality among its population, the event is potentially serious for other states whose residents return from the international competition.

**2. Is the event unusual or unexpected? No**

Factors indicating that the event is neither unusual nor unexpected:

- The event is caused by a known agent from a likely common source.
- Evolution of cases is not more severe than expected and the occurrence of the event itself is not unusual for the area.



**3. Is there a significant risk of international spread? Yes**

Factors indicating that international spread is likely:

- There is a high risk for cross border movement of measles through incubating participants returning to their home country, which endangers the elimination of measles in those countries that already achieved this goal or are on the brink of it.

**4. Is there a significant risk of international trade or travel restrictions? No**

Factors indicating that the adoption of trade or travel restrictions are rather unlikely:

- Though the measles outbreak has occurred in association with an international gathering, similar events in the past have not resulted in international restriction on trade and/or travel

**Based on the above information, this measles outbreak meets two or more of the four criteria of the algorithm in Annex 2, and, thus needs to be notified under Article 6 of the IHR (2005).**

**Learning Points:**

1. Disease outbreaks at international events are potentially serious because of the risk of transmission to susceptible persons in large groups gathered in a confined environment.
2. An outbreak of a disease in conjunction with an international gathering may have a high public health impact as a result of exportation of the agent, vehicle or host to countries that have no or almost no indigenous transmission.
3. The public health risk of the occurrence of an infectious agent associated with international gatherings must be considered, even in areas without recent activity of that pathogen.
4. Following a joint risk assessment WHO might facilitate international contact tracing.

### **Case scenario 11: Cases of clinically suspected smallpox**

*Local media report an outbreak of sick adolescents with rash in a high school of a large city in country CD. A week ago, a high school student visited the university hospital emergency room in the same town with fever, malaise, severe muscle aches and slight leukopenia, but the physical exam and laboratory results were otherwise normal. Two days later, the same student returned to the emergency room after collapsing in class. She now had a red, vesicular rash on the face and arms and appeared acutely ill. Her temperature was 38.5 °C and her blood pressure was normal. She was admitted to the infectious disease ward with presumptive diagnosis of adult chickenpox. She had apparently no contact with others known to have chickenpox.*

*Over the course of the same week, 2 students from the same high school came to the university hospital emergency room with influenza-like symptoms and were sent home. These students returned to the emergency room with vesicular rash and severe prostration with headache. They were also admitted to the hospital with presumptive diagnosis of chickenpox. The day following their admission, the infectious disease consultant examined the students who had maculopapular rash on the face, forearms, hands and on the soles of the feet. The skin lesions were mostly deep-seated, hard and round well-circumscribed vesicles and pustules, which are partially umbilicated or confluent. Based on the clinical picture, the consultant raised the possibility of smallpox and the hospital epidemiologist declared a contagious disease emergency. Consequently, the 3 patients were moved to negative-pressure rooms with HEPA filters. Visitors and hospital staff not already caring for and in contact with patients are forbidden to enter the floor. Infection-control nurses begin interviewing staff to determine who has been in face-to-face contact with the patients during initial emergency room visits and admission.*

*Swab specimens from skin lesions had been sent to a laboratory, and requested to be examined by PCR for chickenpox, measles and smallpox. All samples tested negative for measles and chickenpox. Unfortunately, this laboratory and other laboratories in country CD do not have the laboratory capacity to rule out smallpox. In addition, the shipment of specimens by air to a specialized reference laboratory in country EF is delayed as the airline personnel have concerns about the possibility of becoming infected by the infectious material during transport. Moreover, the permission for import of specimens by recipient country EF is pending. Given that cases of smallpox are clinically suspected, a conference call between the hospital epidemiologist, the chair of the department of internal medicine, the hospital president for medical affairs, the National Institute of Infectious Diseases and city and state health authorities is set up. The group agrees that until definite laboratory diagnosis is obtained the affected hospital should be isolated. Accordingly, no one is allowed to leave the hospital until all persons with potential exposure are identified so that they can be quarantined and vaccinated in case specimens test positive for smallpox. A heated debate follows about the difficulties to obtain an approval required for specimen shipment. Over the course of today, public health authorities received a report of an additional case with skin rash of unknown cause from the original town.*

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**Under the IHR (2005), the presence of any two of the four criteria provided in the decision instrument of Annex 2 means that the event needs to be notified. While using the decision instrument, please answer the following questions:**

**1. Is the public health impact of this event serious? Yes**

Factors indicating that a serious public impact of the event is likely:

- The event poses a significant public health risk since individual cases match the definition for suspected cases of smallpox provided under the IHR (2005) and no alternative diagnosis explains the illness.
- External assistance may be required to identify the causal agent and control the ongoing event.
- Irrespective of the suspicion for smallpox, the event seems to have a high potential to cause a severe epidemic given the relatively severe clinical outcome and increasing number of cases since onset of the outbreak. The event caused by a still unknown pathogenic agent offers continuing opportunities for human infection that might compromise control efforts.

**2. Is the event unusual or unexpected? Yes**

Factors indicating that the event is unusual or unexpected:

- In the absence of known smallpox disease, any detection of a case fulfilling the highly specific clinical case definition for smallpox is unusual and unexpected (see IHR (2005) case definitions: [http://www.who.int/ihr/capacity/case\\_definitions/en/index.html](http://www.who.int/ihr/capacity/case_definitions/en/index.html)).

**3. Is there a significant risk of international spread? No**

Factors indicating that international spread is unlikely:

- The event does not indicate a risk of disease dissemination across national borders.

**4. Is there a significant risk of international trade or travel restrictions? No/Yes**

Factors indicating that the adoption of trade or travel restrictions are unlikely/likely:

- So far, there seems to be no risk of imposition of trade or travel restrictions. However, media attention towards clinically suspected smallpox cases may increase the risk of travel restrictions.

**Based on the above information, this event meets two or more of the four criteria of the algorithm in Annex 2, and, thus needs to be notified under Article 6 of the IHR (2005).**

**Learning Points:**

1. Though a notifiable case of smallpox is defined under the IHR (2005) as a clinically suspected case with laboratory confirmation, the detection of a serious suspected case of smallpox pending laboratory confirmation shall not preclude States Parties from immediately applying the 4 assessment criteria and notifying WHO of such a case. The clinical suspicion for smallpox could well lead to a notification even before laboratory confirmation is available.
2. Notification enables the notifying country to start a confidential dialogue with WHO on further event assessment and any appropriate investigative or response measures, including specific opportunities for the transportation and laboratory testing of specimens.

## Case scenario 12: Fatal cases associated with yellow fever vaccine

*A yellow fever vaccination campaign was conducted in a province of Country S following an earthquake. Four cases of vaccine-associated viscerotropic disease (YF-AVD), all fatal, were reported among approximately 40,000 individuals who received one particular lot of yellow fever vaccine. Because of this, the campaign was suspended by national authorities. The rate of YF-AVD was approximately 10/100,000 doses administered for this vaccine lot, compared to a rate of approximately 0.3/100,000 expected based on prior experience with yellow fever vaccines. An investigation is ongoing, which includes clinical and laboratory evaluation of the cases, epidemiologic evaluation of the adverse events, and a review of vaccine production at the manufacturing facility. Viral suspension used to make the vaccine lot administered in the province had also been used to produce seven other batches, which had been administered in three other countries in the region. There have been no confirmed adverse events following immunisation (AEFI) with the other batches.*

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**Under the IHR (2005), the presence of any two of the four criteria provided in the decision instrument of Annex 2 means that the event needs to be notified. While using the decision instrument, please answer the following questions:**

### **1. Is the public health impact of this event serious?** Yes

Factors indicating a serious public health impact of the event:

- The vaccine is used for routine infant immunization in endemic countries, and for population wide immunization in response to imminent or ongoing yellow fever outbreak. The vaccine is also approved by WHO for the use for international travel in accordance with Annex 7 of IHR (2005). The circumstances surrounding this particular event have the potential to generate a misunderstanding about the vaccine's safety and thereby to reduce its utilization.

### **2. Is the event unusual or unexpected?** Yes

Factors indicating that the event is unusual:

- Reports of vaccine associated viscerotropic disease cases have been published in 2001, but earlier cases have been identified since. The rate of the vaccine reaction in recent mass immunization campaigns has been 0-0.1/100.000 administered doses of medicine. Rates of YF-AVD associated with vaccine administration outside of mass campaigns has been estimated to be 0.3/100.000 doses.

### **3. Is there a significant risk of international spread?** Yes

Factors indicating that international spread is likely:

- Specific vaccine lot has been distributed to four countries.
- The recall of the vaccine product could lead to supply shortages.

### **4. Is there a significant risk of international trade or travel restrictions?** Yes

Factors indicating that the adoption of trade restrictions are likely:

- Temporary suspension of vaccine products following notification of safety concerns is common practice at the national and international level, until further clarification. National regulatory agencies in other countries are likely to follow suit with temporary suspensions or market recall as appropriate.

**Based on the above information, this event meets two or more of the four criteria in the decision instrument, and thus needs to be notified under Article 6 of the IHR (2005).**

**Learning Points:**

1. Events potentially notifiable under the IHR (2005) extend beyond communicable diseases and may include issues related to public health interventions.
2. The notification requirements under the IHR (2005) provide an additional mechanism for vaccine vigilance and data sharing between national regulatory agencies.

**Case scenario 13: Hazardous toy**

*A week ago, a 5 year old boy presented to a paediatric hospital in country GH with a decreased level of consciousness. There was no history of trauma, ingestion of medicines or plants. On arrival at the hospital, the boy was unconscious, bradycardic and severely hypotensive. Clinical laboratory investigations were all within normal limits. Computed tomography of the brain and an electroencephalogram showed no abnormalities. The urine toxicology screen returned with a negative result for illicit drugs. He was investigated and treated for suspected intracranial infection. Seven hours after presentation he became fully alert and cooperative. At this point he vomited a number of coloured beads and also passed a substantial number of beads in his stool. These were identified as beads from a toy. The boy had a further five episodes of vomiting and was persistently drowsy. With no obvious diagnosis, he was admitted to hospital for observation and further investigation.*

*A urine metabolic screen became available on Day 5 of admission and was positive for  $\gamma$ -hydroxybutyrate (GHB), which is a naturally occurring fatty acid found throughout the human body. The source of GHB in this patient was thought to be either exogenous (i.e. poisoning) or an inborn error of metabolism. The latter was excluded when a repeat metabolic screen from urine taken on Day 3 returned with a negative result for GHB. In searching for an exogenous source of GHB, toy beads from the boy's home, similar to those ingested, were sent for analysis and subsequently found to contain 1,4-butanediol (1,4-BD), which is metabolised to GHB in humans. After confirmation of GHB poisoning in this patient from 1,4-BD detected in the toy beads, the local Poisons Information Centre was notified. Meanwhile, the patient recovered completely and was discharged a week after admission with no residual sequelae of his poisoning. To date, no additional cases of poisoning associated with the use of the product have been reported. There is a dose-response relationship in GHB toxicity. Low doses may result in vomiting, drowsiness, visual disturbance and disinhibition, while higher-dose effects include confusion, coma, bradycardia and myoclonic (seizure-like) movements.*

*The national Consumer Product Safety Agency (CPSA) and the Ministries of Health and Trade have been alerted about the toy product. Because the toy presents a risk of poisoning to children, the CPSA is seeking to take action by removing the product from the marketplace in accordance with the National Hazardous Substances Act in country GH. When the manufacturer in country IJ was contacted, it supplied a list of ingredients in the production of the toy beads; this list did not include 1,4-BD. The toy product for children just came out three weeks ago. Meanwhile, two further samples of the beads tested positive for 1,4-BD. As a consequence, the Ministry of Trade issued an interim ban on the sale of the beads products in country GH. Similar products are marketed worldwide.*

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**Under the IHR (2005), the presence of any two of the four criteria provided in the decision instrument of Annex 2 means that the event needs to be notified. While using the decision instrument, please answer the following questions:**

**1. Is the public health impact of this event serious? Yes**

Factors indicating that a serious public impact of the event is likely:

- Several tests revealed that the children's toy contains 1,4-BD which ingested can cause coma, respiratory depression, bradycardia and seizures.
- There is a great potential that other children using this toy would be exposed to a hazardous level of 1,4-BD. Additionally, this particular type of poisoning is difficult to diagnose since routine urine toxicology screens do not generally include GHB; this analysis would only be requested if there was reason to suppose that GHB poisoning was a possibility. This would be more likely in adolescents and adults with a history of possible drug exposure rather than in a young child at home. In this particular case the child was investigated for an inherited metabolic disease, which revealed the presence of GHB. Such a diagnosis might not have been made in a different hospital that did not have the same facilities, or where the attending physician did not take the same approach regarding differential diagnosis.
- It is indicated that possible that other products were manufactured by the same company that present a risk of 1,4-BD poisoning to children.

**2. Is the event unusual or unexpected? Yes**

Factors indicating that the event is unusual or unexpected:

- A hazardous substance has erroneously been used in manufacture, while this product is marketed as being safe for children.

**3. Is there a significant risk of international spread? Yes**

Factors indicating that international spread is likely:

- Similar products are marketed worldwide.

**4. Is there a significant risk of international trade or travel restrictions? Yes**

Factors indicating that the adoption of trade or travel restrictions is likely:

- Worldwide media coverage and an international recall of this product are likely.

**Based on the above information, this event meets two or more of the four criteria of the algorithm in Annex 2, and, thus needs to be notified under Article 6 of the IHR (2005).**

**Learning Points:**

1. Notifiable events can extend beyond communicable diseases and may arise from products containing hazardous chemical substances.
2. Timely notification of such an unusual finding enables WHO to alert at an early stage other countries to be on the lookout for similar cases.
3. It is important to consider the potential export of similar products that may contain hazardous substances.

## **Case scenario 14: Dengue Outbreak**

*An outbreak of a serotype (type 3) of Dengue has been identified in the tropical area of Country V. While this serotype had never been identified in Country V and other countries of the region, another serotype (type1) of dengue is endemic, and there have also been cases resulting from a second serotype (type 2). The introduction of a new serotype has the potential to establish itself in this and other areas. Residents have been urged to protect themselves from mosquito bites.*

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**Under the IHR (2005), the presence of any two of the four criteria provided in the decision instrument of Annex 2 means that the event needs to be notified. While using the decision instrument, please answer the following questions:**

**1. Is the public health impact of this event serious? Yes**

Factors indicating a serious public health impact of the event:

- The introduction of a new serotype is associated with an epidemic potential and may represent a greater public health risk.

**2. Is the event unusual or unexpected? Yes / No**

Factors indicating that the event is unusual or unexpected:

- The occurrence of a new serotype can be unusual.
- On the other hand, there is always a high possibility of introducing another serotype, especially when other types are already endemic.



**3. Is there a significant risk of international spread? Yes**

Factors indicating that international spread is likely:

- Given the intense movement of people across borders and the fact that there is a documented history of dengue epidemics leading to spread among countries further international spread of the serotype is probable.

**4. Is there a significant risk of international trade or travel restrictions? No**

Factors indicating that the adoption of trade or travel restrictions is unlikely:

- There are no indications for the risk of international trade or travel restrictions.

**Based on the above information, this event meets two or more of the four criteria in the decision instrument, and thus needs to be notified under Article 6 of the IHR (2005).**

**Learning Points:**

- The appearance of a new serotype involves an epidemic potential and may represent a serious public health risk for neighboring countries.

**Case scenario 15: Outbreak of Rift Valley Fever**

*An outbreak of Rift Valley Fever (RVF) is sweeping through a province of country V affecting a large proportion of the country's livestock which is also exported to neighbouring countries. RVF has only occurred sporadically in country V in the last twenty years. Yesterday, two human blood samples yielded positive results on tests for RVF.*

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**Under the IHR (2005), the presence of any two of the four criteria provided in the decision instrument of Annex 2 means that the event needs to be notified. While using the decision instrument, please answer the following questions:**

**1. Is the public health impact of this event serious? Yes**

Factors indicating a serious public health impact of the event:

- RVF has demonstrated the ability to cause serious human disease.

**2. Is the event unusual or unexpected? Yes**

Factors indicating that the event is unusual or unexpected:

- An outbreak of RVF involving a large proportion of country V's livestock is unexpected.

**3. Is there a significant risk of international spread? Yes**

Factors indicating that international spread is likely:

- RVF has demonstrated to spread rapidly internationally through the trade of live animals.

**4. Is there a significant risk of international trade or travel restrictions? Yes**

Factors indicating that the adoption of trade restrictions is likely:

- International trade restrictions are very likely because RVF is classified as an OIE List A disease (A080), which provides legitimacy to other countries for barriers to trade.

**Based on the above information, this event meets two or more of the four criteria in the decision instrument, and thus needs to be notified under Article 6 of the IHR (2005).**

**Learning Points:**

- Viral haemorrhagic fevers are diseases of special concern under the IHR (2005) and must always be assessed using the decision instrument to decide whether the event is notifiable.
- Annex 2 must be applied to animal diseases that have the capacity to infect humans in order to determine the notifiability of a given animal-associated event under the IHR (2005).
- Immediate notification to WHO upon detection of public health risks that spread rapidly internationally can be essential to provide timely public health information to other countries to allow them to assess and respond to such risks, as required in the IHR (2005).
- The presence of an animal disease which is part of the OIE disease list A provides trading partners with a sufficient reason to impose a trade embargo, posing a significant risk of international trade restrictions.

## Case scenario 16: Radiopharmaceutical facility accident

*An accident occurred at a facility producing radiopharmaceuticals for nuclear medicine purposes (diagnostics and research). The facility is located in Country B on the border between two other countries. The accident resulted in a release of radioactive iodine into the atmosphere that contaminated some agricultural areas in the vicinity of the radiopharmaceutical facility. Country B, like its neighbors, exports dairy products to several other countries.*

*Radioactive iodine emits beta radiation and has a short half-life (eight days). Radioactive iodine can be ingested when contaminated vegetables are consumed without proper washing or with contaminated milk and dairy products. When ingested or inhaled, radioactive iodine acts similar to stable iodine and is accumulated in the thyroid gland. High-dose exposures have been associated with an increased risk of papillary thyroid carcinomas in those exposed at a young age (0-18), as documented in Chernobyl studies. In this particular case, the radiation doses that resulted from the accident were substantially below the reference levels for an intervention with potassium iodide (KI) pills, hence the KI pills were not administered. The Federal Office for Radiation Protection confirmed that exposure to this level of released radioactive iodine will not increase the risk of thyroid cancer.*

*As a precautionary measure, the national competent authorities of country B informed the public about proper washing of vegetables and implemented restrictions in the use of rain water and local agricultural and dairy products for the duration of one month.*

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**Under the IHR (2005), the presence of any two of the four criteria provided in the decision instrument of Annex 2 means that the event needs to be notified. While using the decision instrument, please answer the following questions:**

**1. Is the public health impact of this event serious? No**

Factors indicating that a serious public impact of the event is unlikely:

- Level of radioactive iodine release is below the level deemed hazardous to human health.
- Low-dose exposures to local population, hence KI pills not needed.
- The population has been informed about the proper washing of vegetables, and restrictions were implemented within the country in the use of rainwater and local agricultural and dairy products.

**2. Is the event unusual or unexpected? Yes**

Factors indicating that the event is unusual or unexpected:

- An accidental release of radioactive iodine is always unusual and unexpected.

**3. Is there a significant risk of international spread? Yes**

Factors indicating that international spread is likely:

- The facility is located in proximity to international borders. International spread is therefore likely, especially under certain weather conditions.
- There is a risk that contaminated products have been exported.

**4. Is there a significant risk of international trade or travel restrictions? Yes**

Factors indicating that the adoption of trade or travel restrictions is likely:

- The risk of international trade restrictions against food products from Country B cannot be ruled out.
- High interest by international media and other countries' authorities are possible based on nature of incident.

**Based on the above information, it is clear that this event meets two of the four criteria of the algorithm in Annex 2, and thus needs to be notified under Article 6 of the IHR (2005).**

**Learning Points:**

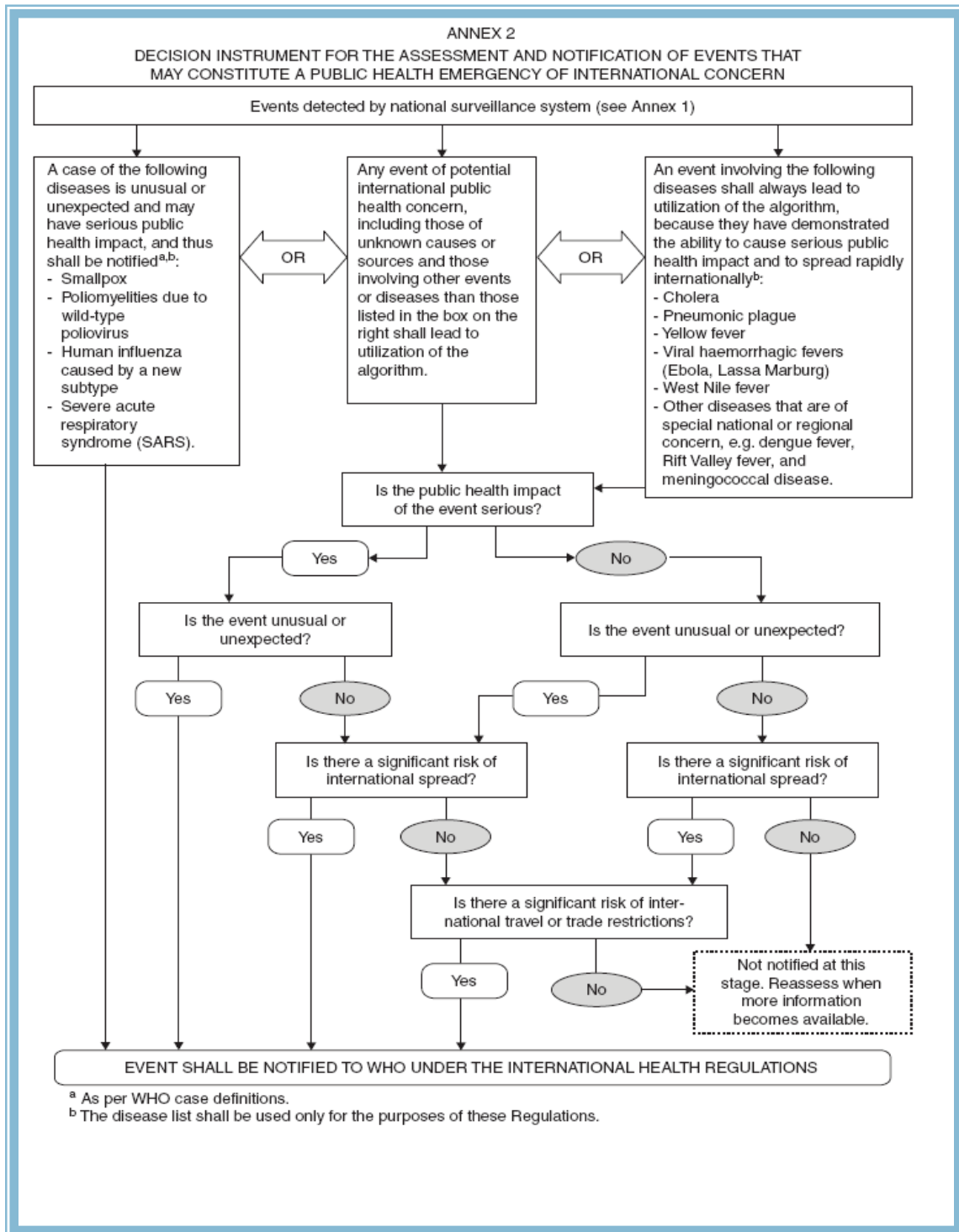
1. Notifiable events can extend beyond communicable diseases and may arise from accidental exposure to radiation due to release of radioactive materials into the environment or a presence of a radioactive source in the vicinity of humans.
2. In the context of radiation accidents, there is always a great potential that other national authorities impose a ban on food products from the affected country until trust is restored.
3. For risk assessment in case a radiological event falls under the competence of other than national health authorities, it is imperative to establish operational and functional links with appropriate national competent authorities dealing with radiation emergencies and to coordinate the response of health authorities with these agencies.
4. Radiological events generate high media interest; hence early and transparent communication is a key component in the management of radiation emergencies.

## **8. APPENDIX**

### **8.1. Article 6: Notification**

1. Each State Party shall assess events occurring within its territory by using the decision instrument in Annex 2. Each State Party shall notify WHO, by the most efficient means of communication available, by way of the National IHR Focal Point, and within 24 hours of assessment of public health information, of all events which may constitute a public health emergency of international concern within its territory in accordance with the decision instrument, as well as any health measure implemented in response to those events. If the notification received by WHO involves the competency of the International Atomic Energy Agency (IAEA), WHO shall immediately notify the IAEA.
2. Following a notification, a State Party shall continue to communicate to WHO timely, accurate and sufficiently detailed public health information available to it on the notified event, where possible including case definitions, laboratory results, source and type of the risk, number of cases and deaths, conditions affecting the spread of the disease and the health measures employed; and report, when necessary, the difficulties faced and support needed in responding to the potential public health emergency of international concern.

## 8.2. Annex 2 of the IHR (2005)



# **EXAMPLES FOR THE APPLICATION OF THE DECISION INSTRUMENT FOR THE ASSESSMENT AND NOTIFICATION OF EVENTS THAT MAY CONSTITUTE A PUBLIC HEALTH EMERGENCY OF INTERNATIONAL CONCERN**

*The examples appearing in this Annex are not binding and are for indicative guidance purposes to assist in the interpretation of the decision instrument criteria.*

## **DOES THE EVENT MEET AT LEAST TWO OF THE FOLLOWING CRITERIA?**

<b>Is the public health impact of the event serious?</b>	<i>I. Is the public health impact of the event serious?</i>
	<b>1. Is the number of cases and/or number of deaths for this type of event large for the given place, time or population?</b>
	<b>2. Has the event the potential to have a high public health impact?</b> THE FOLLOWING ARE EXAMPLES OF CIRCUMSTANCES THAT CONTRIBUTE TO HIGH PUBLIC HEALTH IMPACT: <ul style="list-style-type: none"> <li>✓ Event caused by a pathogen with high potential to cause epidemics (infectiousness of the agent, high case fatality, multiple transmission routes or healthy carrier).</li> <li>✓ Indication of treatment failure (new or emerging antibiotic resistance, vaccine failure, antidote resistance or failure).</li> <li>✓ Event represents a significant public health risk even if no or very few human cases have yet been identified.</li> <li>✓ Cases reported among health staff.</li> <li>✓ The population at risk is especially vulnerable (refugees, low level of immunization, children, elderly, low immunity, malnourished, etc.).</li> <li>✓ Concomitant factors that may hinder or delay the public health response (natural catastrophes, armed conflicts, unfavourable weather conditions, multiple foci in the State Party).</li> <li>✓ Event in an area with high population density.</li> <li>✓ Spread of toxic, infectious or otherwise hazardous materials that may be occurring naturally or otherwise that has contaminated or has the potential to contaminate a population and/or a large geographical area.</li> </ul>
	<b>3. Is external assistance needed to detect, investigate, respond and control the current event, or prevent new cases?</b> THE FOLLOWING ARE EXAMPLES OF WHEN ASSISTANCE MAY BE REQUIRED: <ul style="list-style-type: none"> <li>✓ Inadequate human, financial, material or technical resources – in particular:                         <ul style="list-style-type: none"> <li>– Insufficient laboratory or epidemiological capacity to investigate the event (equipment, personnel, financial resources)</li> <li>– Insufficient antidotes, drugs and/or vaccine and/or protective equipment, decontamination equipment, or supportive equipment to cover estimated needs</li> <li>– Existing surveillance system is inadequate to detect new cases in a timely manner.</li> </ul> </li> </ul>
	<b>IS THE PUBLIC HEALTH IMPACT OF THE EVENT SERIOUS?</b> <b>Answer “yes” if you have answered “yes” to questions 1, 2 or 3 above.</b>



<b>Is the event unusual or unexpected?</b>	<b>II. Is the event unusual or unexpected?</b>
	<p>4. <i>Is the event unusual?</i></p> <p>THE FOLLOWING ARE EXAMPLES OF UNUSUAL EVENTS:</p> <ul style="list-style-type: none"> <li>✓ The event is caused by an unknown agent or the source, vehicle, route of transmission is unusual or unknown.</li> <li>✓ Evolution of cases more severe than expected (including morbidity or case-fatality) or with unusual symptoms.</li> <li>✓ Occurrence of the event itself unusual for the area, season or population.</li> </ul>
	<p>5. <i>Is the event unexpected from a public health perspective?</i></p> <p>THE FOLLOWING ARE EXAMPLES OF UNEXPECTED EVENTS:</p> <ul style="list-style-type: none"> <li>✓ Event caused by a disease/agent that had already been eliminated or eradicated from the State Party or not previously reported.</li> </ul>
	<p style="text-align: center;"><b>IS THE EVENT UNUSUAL OR UNEXPECTED?</b></p> <p style="text-align: center;"><b>Answer “yes” if you have answered “yes” to questions 4 or 5 above.</b></p>

<b>Is there a significant risk of international spread?</b>	<b>III. Is there a significant risk of international spread?</b>
	<p>6. <b>Is there evidence of an epidemiological link to similar events in other States?</b></p>
	<p>7. <i>Is there any factor that should alert us to the potential for cross border movement of the agent, vehicle or host?</i></p> <p>THE FOLLOWING ARE EXAMPLES OF CIRCUMSTANCES THAT MAY PREDISPOSE TO INTERNATIONAL SPREAD:</p> <ul style="list-style-type: none"> <li>✓ Where there is evidence of local spread, an index case (or other linked cases) with a history within the previous month of: <ul style="list-style-type: none"> <li>– international travel (or time equivalent to the incubation period if the pathogen is known)</li> <li>– participation in an international gathering (pilgrimage, sports event, conference, etc.)</li> <li>– close contact with an international traveller or a highly mobile population.</li> </ul> </li> <li>✓ Event caused by an environmental contamination that has the potential to spread across international borders.</li> <li>✓ Event in an area of intense international traffic with limited capacity for sanitary control or environmental detection or decontamination.</li> </ul>
	<p style="text-align: center;"><b>IS THERE A SIGNIFICANT RISK OF INTERNATIONAL SPREAD?</b></p> <p style="text-align: center;"><b>ANSWER “YES” IF YOU HAVE ANSWERED “YES” TO QUESTIONS 6 OR 7 ABOVE.</b></p>

<b>Risk of international travel and/or trade restrictions ?</b>	<b>IV. Is there a significant risk of international travel or trade restrictions?</b>
	8. <i>Have similar events in the past resulted in international restriction on trade and/or travel?</i>
	9. <i>Is the source suspected or known to be a food product, water or any other goods that might be contaminated that has been exported/imported to/from other States?</i>
	10. <i>Has the event occurred in association with an international gathering or in an area of intense international tourism?</i>
	11. <i>Has the event caused requests for more information by foreign officials or international media?</i>
	<b>IS THERE A SIGNIFICANT RISK OF INTERNATIONAL TRADE OR TRAVEL RESTRICTIONS?</b> <b>ANSWER "YES" IF YOU HAVE ANSWERED "YES" TO QUESTIONS 8, 9, 10 OR 11 ABOVE.</b>

**States Parties that answer "yes" to the question whether the event meets any two of the four criteria (I-IV) above, shall notify WHO under Article 6 of the International Health Regulations.**

### **8.3. Case definitions for the four diseases requiring notification in all circumstances under the IHR (2005)**

#### **A) Human influenza caused by a new subtype**

##### **Case definition for notification of human influenza caused by a new subtype under the IHR (2005)**

State Parties to the IHR (2005) are required to immediately notify WHO of any laboratory confirmed case of a recent human infection caused by an influenza A virus with the potential to cause a pandemic. Evidence of illness is not required for this report.

An influenza A virus is considered to have the potential to cause a pandemic if the virus has demonstrated the capacity to infect a human and if the hemagglutinin gene (or protein) is not a variant or mutated form of those, i.e. A/H1 or A/H3, circulating widely in the human population.

An infection is considered recent if it has been confirmed by positive results from polymerase chain reaction (PCR), virus isolation, or paired acute and convalescent serologic tests. An antibody titre in a single serum is often not enough to confirm a recent infection, and should be assessed by reference to valid WHO case definitions for human infections with specific influenza A subtypes.

#### **B) Poliomyelitis due to wild-type poliovirus**

##### **Case definition for notification of poliomyelitis due to wild-type poliovirus under the IHR (2005)**

Under the IHR (2005), a notifiable case of poliomyelitis due to wild-type poliovirus is defined as a suspected case\* with isolation of wild poliovirus in stool specimens<sup>3</sup> collected from the suspected case or from a close contact of the suspected case.

\*A suspected case is defined as a child (under 15 years of age) presenting with acute flaccid paralysis (AFP<sup>4</sup>), or as any person at any age with paralytic illness if poliomyelitis is suspected.

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<sup>3</sup> As a standard procedure, two stool specimens are collected from an AFP case within 14 days of paralysis onset. Since virus excretion in the stool decreases beyond two weeks after paralysis onset, and to increase the sensitivity of virus detection, additional stool specimens from up to five close contacts are taken from AFP cases for whom 2 specimens collected within 14 days of paralysis onset are not available.

<sup>4</sup> Poliomyelitis cannot be diagnosed reliably on clinical grounds because other conditions presenting with acute paralysis can mimic poliomyelitis. Surveillance for polio eradication therefore requires the reporting of all children < 15 yrs with acute onset flaccid paralysis, with subsequent laboratory testing of stool specimens.

### **Note concerning notification of wild or vaccine-derived poliovirus from sources other than AFP cases**

In addition to notification of laboratory confirmed cases of poliomyelitis due to wild-type poliovirus (a disease which is designated in Annex 2 of the IHR (2005) as "unusual or unexpected and may have serious public health impact"), the isolation of wild or vaccine-derived poliovirus from other human or non-human sources (from persons without paralysis, or from environmental samples) must generally also be notified to WHO under the separate notification requirement for "events which may constitute a public health emergency of international concern" as they fulfill at least two of the four criteria for notification.

## **C) Severe Acute Respiratory Syndrome (SARS)**

### **Case definition for notification of SARS under the IHR (2005)**

In the SARS post-outbreak period, a notifiable case of SARS is defined as an individual with laboratory confirmation of infection with SARS coronavirus (SARS-CoV) who **either** fulfils the clinical case definition of SARS **or** has worked in a laboratory working with live SARS-CoV or storing clinical specimens infected with SARS-CoV.

#### **Clinical case definition of SARS:**

1. A history of fever, or documented fever  
**AND**
2. One or more symptoms of lower respiratory tract illness (cough, difficulty breathing, shortness of breath)  
**AND**
3. Radiographic evidence of lung infiltrates consistent with pneumonia or acute respiratory distress syndrome (ARDS) or autopsy findings consistent with the pathology of pneumonia or ARDS without an identifiable cause  
**AND**
4. No alternative diagnosis can fully explain the illness.

#### **Diagnostic tests required for laboratory confirmation of SARS:**

**A) Conventional reverse transcriptase polymerase chain reaction (RT-PCR) and real-time reverse transcriptase PCR (real-time RT-PCR) assay** detecting viral RNA present in:

1. At least two different clinical specimens (e.g. nasopharyngeal and stool)  
**OR**
2. The same clinical specimen collected on two or more occasions during the course of the illness (e.g. sequential nasopharyngeal aspirates)  
**OR**
3. In a new extract from the original clinical sample tested positive by two different assays or repeat RT-PCR/real-time RT-PCR on each occasion of testing

**OR**

4. In virus culture from any clinical specimen.

**B) Enzyme Linked Immunosorbent Assay (ELISA) and immunofluorescent assay (IFA)**

1. Negative antibody test on serum collected during the acute phase of illness followed by positive antibody test on convalescent phase serum, tested simultaneously

**OR**

2. Fourfold or greater rise in antibody titre against SARS-CoV between an acute serum specimen and a convalescent serum specimen (paired sera), tested simultaneously.

**Note:**

In the absence of known SARS-CoV transmission to humans, the positive predictive value of a SARS-CoV diagnostic test is extremely low; therefore the diagnosis should be independently verified in one or more WHO International SARS Reference and Verification Network laboratories. A single case of SARS must be reported to WHO under the IHR (2005).

A detailed exposure history is an essential part of the diagnostic workup for any person under investigation for SARS. More information on SARS surveillance can be found at: [http://www.who.int/csr/resources/publications/WHO\\_CDS\\_CSR\\_ARO\\_2004\\_1/en/index.html](http://www.who.int/csr/resources/publications/WHO_CDS_CSR_ARO_2004_1/en/index.html).

Infections with SARS-CoV that occur as a result of breaches in laboratory biosafety/biosecurity should be fully investigated.

Once an outbreak of SARS has been independently verified by one or more WHO International SARS Reference and Verification Network laboratories, WHO will make the appropriate case definitions for surveillance and reporting available through its well-established mechanisms.

**D) Smallpox**

**Case definition for notification of smallpox under the IHR (2005)**

States Parties to the IHR (2005) are required to immediately notify to WHO any confirmed case of smallpox. The case definition for a confirmed smallpox case includes the following:

**Confirmed case of smallpox:**

An individual of any age presenting with acute onset of fever ( $\geq 38.3^{\circ}\text{C}/101^{\circ}\text{F}$ ), malaise, and severe prostration with headache and backache occurring 2 to 4 days before rash onset

**AND**

Subsequent development of a maculopapular rash starting on the face and forearms, then spreading to the trunk and legs, and evolving within 48 hours to deep-seated, firm/hard and round well-circumscribed vesicles and later pustules, which may become umbilicated or confluent

**AND**

Lesions that appear in the same stage of development (i.e. all are vesicles or all are pustules) on any given part of the body (e.g. the face or arm)

**AND**

No alternative diagnosis explaining the illness

**AND**

Laboratory confirmation.

**Note:**

In contrast to the varicella (chickenpox) infection with centripetal and more superficial lesions, the majority of smallpox cases present with a characteristic rash that evolves slowly over days (with each stage lasting 1-2 days) at the same rate and is centrifugal in distribution, i.e. predominantly concentrated on face and extremities with usual involvement of the palms and soles of the feet. More information and illustrative examples to differentiate smallpox from chickenpox can be found at <http://www.who.int/csr/disease/smallpox/preparedness/en/index.html>.

The risk of not identifying atypical presentations of smallpox is weighed against the extreme low risk of reintroduction of the disease and the very high risk of obtaining a false-positive laboratory result. In view of this, laboratory tests to confirm smallpox should be limited to individuals that match the above clinical case definition. Should a single, laboratory confirmed case of smallpox ever occur, it would then be considered an outbreak since smallpox no longer exists as a naturally occurring disease.

#### **8.4. Acknowledgements**

The IHR Coordination Programme would like to thank the following WHO staff members for their invaluable support in the design of the case scenarios contained in this guidance document on Annex 2: Bertherat, Eric; Carr, Zhanat; Chaignat, Claire-Lise; Dabbagh, Alya; Drager-Dayal, Renu; Ellis, Andrea; Formenty, Pierre; Grein, Tom; Gutschmidt, Kersten; Hugonnet, Stéphane; Lavanchy, Daniel; Legros, Dominique; Perea, William; Pfeifer, Dina; Strebel, Peter; Tangermann, Rudolf; Tempowski, Joanna.

We are also grateful to Dr Preben Aavitsland and all other participants of the WHO Technical consultation on the Implementation and Evaluation of Annex 2 of the IHR (2005) for serving the revision of WHO's guidance document for the use of Annex 2.



# Exhibit 13

Search



## GOVERNOR PARSON ANNOUNCES DEPLOYMENT OF DECONTAMINATION SYSTEM IN MISSOURI TO ASSIST WITH N95 MASK SHORTAGE



(mailto:?)

ent%20of%20Decontamination%20System%20in%20Missouri%20to%20Assist%20with%20N95%20Mask%20Shortage%20&body=Check gov/press-releases/archive/governor-parson-announces-deployment-decontamination-system-missouri-assist)

APRIL 22, 2020

**JEFFERSON CITY** — In today's COVID-19 briefing, Governor Parson announced the deployment of a decontamination system in Missouri to assist with the N95 mask shortage.

Governor Parson was joined by CoxHealth Medical Director of Infectious Diseases Dr. Robin Trotman, Missouri Department of Health and Senior Services (DHSS) Director Dr. Randall Williams, MO HealthNet Director Todd Richardson, and Missouri Department of Public Safety Director Sandy Karsten.

In an effort to conserve personal protective equipment amid the COVID-19 crisis, hospitals, health care providers, and first responder agencies will have the opportunity to utilize the Battelle Critical Care Decontamination System (CCDS) starting next week to safely decontaminate N95 masks for reuse.

Expanding PPE reserves is one of the four essential pillars of the state's "Show Me Strong Recovery" plan.

"The PPE shortage has been a top concern in Missouri and nationwide as health care professionals and first responders respond to COVID-19," **Governor Parson** said. "By helping conserve PPE, this system will be a huge asset to our overall recovery plan."

A result of two decades of research and approved for use through the federal Food and Drug Administration, the system uses a process of vapor phase hydrogen peroxide to decontaminate the masks. Any one mask can be decontaminated using this process up to 20 times without impacting its integrity.

The Battelle CCDS is 100 percent federally funded through the Federal Emergency Management Agency and the U. S. Department of Health and Human Services, allowing the mask decontamination to be provided at no cost to health care providers.

There will be up to 13 drop-off and pick-up sites located throughout the state for health care providers and first responders to drop off their N95 masks for decontamination. Each facility or organization will be responsible for correctly and safely packaging their contaminated masks and labeling them according to the directions supplied by Battelle.

The masks are then transported via a biohazard courier to the temporary site of the Battelle CCDS in Jefferson City. The masks are then returned to the original drop-off/pick-up site approximately 72 hours following drop-off.

The Battelle system is completely safe while in operation to the surrounding community. Specialists from both DHSS and the Department of Natural Resources have thoroughly reviewed the specifications.

It is anticipated that the Battelle system will be available to Missouri providers for use for at least six months. Battelle continues to research additional types of PPE that might be safely decontaminated using this process. Any health care or first responder organization interested in using the Battelle CCDS to decontaminate N95 masks should enroll at [\*\*www.battelle.org/N95\*\* \(\[\\*\\*https://urldefense.proofpoint.com/v2/url?u=https-3A\\\_www.battelle.org\\\_inb\\\_battelle-2Dccds-2Dfor-2Dcovid19-2Dsattellite-2Dlocations-3Futm-5Fsource-3Demail-26utm-5Fmedium-3Drespoder-26utm-5Fcampaigh-3Dfy20-2Dcovid-26utm-5Fcontent-3Dv1&d=DwMFaQ&c=GSntNbUav5AC0JjlyPOufmfQT3u3zl7UKdoVzPd-7og&r=ep\\\_vY\\\_YZvQO4gTTTzhrHgwLWzZKFmXwbuV1ci7zYS-A&m=Nf230vA5he5pzjhREuOPp2St0vM5nOoCymLq4o1d6O4&s=xfzZWaVaNPd4VcyKRYfNA4PrImhXThCnyjEx656wvcg&e=\\)\\*\\*\]\(https://urldefense.proofpoint.com/v2/url?u=https-3A\_www.battelle.org\_inb\_battelle-2Dccds-2Dfor-2Dcovid19-2Dsattellite-2Dlocations-3Futm-5Fsource-3Demail-26utm-5Fmedium-3Drespoder-26utm-5Fcampaigh-3Dfy20-2Dcovid-26utm-5Fcontent-3Dv1&d=DwMFaQ&c=GSntNbUav5AC0JjlyPOufmfQT3u3zl7UKdoVzPd-7og&r=ep\_vY\_YZvQO4gTTTzhrHgwLWzZKFmXwbuV1ci7zYS-A&m=Nf230vA5he5pzjhREuOPp2St0vM5nOoCymLq4o1d6O4&s=xfzZWaVaNPd4VcyKRYfNA4PrImhXThCnyjEx656wvcg&e=\)\)](https://urldefense.proofpoint.com/v2/url?u=https-3A_www.battelle.org_inb_battelle-2Dccds-2Dfor-2Dcovid19-2Dsattellite-2Dlocations-3Futm-5Fsource-3Demail-26utm-5Fmedium-3Drespoder-26utm-5Fcampaigh-3Dfy20-2Dcovid-26utm-5Fcontent-3Dv1&d=DwMFaQ&c=GSntNbUav5AC0JjlyPOufmfQT3u3zl7UKdoVzPd-7og&r=ep_vY_YZvQO4gTTTzhrHgwLWzZKFmXwbuV1ci7zYS-A&m=Nf230vA5he5pzjhREuOPp2St0vM5nOoCymLq4o1d6O4&s=xfzZWaVaNPd4VcyKRYfNA4PrImhXThCnyjEx656wvcg&e=))

Also in today's briefing, Governor Parson announced that DHSS has expanded the **criteria for who can be approved** (<https://health.mo.gov/emergencies/ert/alertsadvories/pdf/update42220.pdf>) for testing through the Missouri State Public Health Laboratory.

In addition to symptomatic close contacts to a suspect COVID-19 patient or a laboratory-confirmed COVID-19 patient and symptomatic health care workers and first responders, DHSS will also approve state testing for symptomatic residents of congregate living facilities whose residents are at higher risk for poor outcomes; symptomatic hospitalized patients who have signs and symptoms compatible with COVID-19; and symptomatic patients who are at high risk for negative health outcomes from COVID-19.

For individuals not meeting DHSS criteria for testing, providers may pursue private laboratory testing. Testing through private laboratories does not require DHSS approval. An **interactive testing site map** ([\*\*https://urldefense.proofpoint.com/v2/url?u=http-3A\\_mophep.maps.arcgis.com\\_apps\\_opsdashboard\\_index.html-23\\_580bb6a25b5b44859bc73013ebf0235f&d=DwMFaQ&c=GSntNbUav5AC0JjlyPOufmfQT3u3zl7UKdoVzPd-7og&r=ep\\_vY\\_YZvQO4gTTTzhrHgwLWzZKFmXwbuV1ci7zYS-A&m=Nf230vA5he5pzjhREuOPp2St0vM5nOoCymLq4o1d6O4&s=xfzZWaVaNPd4VcyKRYfNA4PrImhXThCnyjEx656wvcg&e=\)\*\*](https://urldefense.proofpoint.com/v2/url?u=http-3A_mophep.maps.arcgis.com_apps_opsdashboard_index.html-23_580bb6a25b5b44859bc73013ebf0235f&d=DwMFaQ&c=GSntNbUav5AC0JjlyPOufmfQT3u3zl7UKdoVzPd-7og&r=ep_vY_YZvQO4gTTTzhrHgwLWzZKFmXwbuV1ci7zYS-A&m=Nf230vA5he5pzjhREuOPp2St0vM5nOoCymLq4o1d6O4&s=xfzZWaVaNPd4VcyKRYfNA4PrImhXThCnyjEx656wvcg&e=))

7og&r=ep\_vY\_YZvQO4gTTTzhrHgwLWzZKFmXwbuV1ci7zYS-

A&m=Nf230vA5he5pzjhREuOPp2St0vM5nOoCymLq4o1d6O4&s=0P7yRARdQRWU\_s0DdePI6UJHxOo36LLYEKDAYNhNaTc&e=) is now available on the DHSS website.

To view Governor Parson's remarks from today's briefing, please see attachment. Pictures from the briefing are available on Governor Parson's **Flickr page** ([https://urldefense.proofpoint.com/v2/url?u=https-3A\\_www.flickr.com\\_photos\\_govmikeparson\\_albums\\_72157714001225228&d=DwMFaQ&c=G5ntNbUav5AC0JJlyPOufmfQT3u3zl7UKdoVzPd-7og&r=ep\\_vY\\_YZvQO4gTTTzhrHgwLWzZKFmXwbuV1ci7zYS-A&m=Nf230vA5he5pzjhREuOPp2St0vM5nOoCymLq4o1d6O4&s=yDZPY1zQNOi-2mV-YH81EHtdJt6CjBcaiW-eBNsm1gA&e=](https://urldefense.proofpoint.com/v2/url?u=https-3A_www.flickr.com_photos_govmikeparson_albums_72157714001225228&d=DwMFaQ&c=G5ntNbUav5AC0JJlyPOufmfQT3u3zl7UKdoVzPd-7og&r=ep_vY_YZvQO4gTTTzhrHgwLWzZKFmXwbuV1ci7zYS-A&m=Nf230vA5he5pzjhREuOPp2St0vM5nOoCymLq4o1d6O4&s=yDZPY1zQNOi-2mV-YH81EHtdJt6CjBcaiW-eBNsm1gA&e=))).

3A\_www.flickr.com\_photos\_govmikeparson\_albums\_72157714001225228&d=DwMFaQ&c=G5ntNbUav5AC0JJlyPOufmfQT3u3zl7UKdoVzPd-7og&r=ep\_vY\_YZvQO4gTTTzhrHgwLWzZKFmXwbuV1ci7zYS-A&m=Nf230vA5he5pzjhREuOPp2St0vM5nOoCymLq4o1d6O4&s=yDZPY1zQNOi-2mV-YH81EHtdJt6CjBcaiW-eBNsm1gA&e=).

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# Exhibit

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## SPECIAL REPORT

No. 286 | July 8, 2024

# Holding China Accountable for Its Role in the Most Catastrophic Pandemic of Our Time: COVID-19

*A Report by the Non-partisan Commission on China and COVID-19*

Convened by The Heritage Foundation

Chaired by John L. Ratcliffe, 6th U.S. Director of National Intelligence



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**SPECIAL REPORT**

No. 286 | JULY 8, 2024



## The Heritage Foundation Nonpartisan Commission on China and COVID-19

### Chairman

**John Ratcliffe, J.D.**, 6th U.S. Director of National Intelligence and former Member of the U.S. House of Representatives from the 4th District of Texas.

### Commissioners

**Robert C. O'Brien**, Chairman of American Global Strategies and 27th U.S. National Security Advisor.

**Heidi Heitkamp**, Director of the University of Chicago Institute of Politics and former U.S. Senator from North Dakota.

**Matthew Pottinger**, Chairman of the Foundation for Defense of Democracies China Program and 32nd United States Deputy National Security Advisor.

**Robert R. Redfield, M.D.**, Virologist and former Director of the Centers for Disease Control and Prevention and Administrator of the Agency for Toxic Substances and Disease Registry.

**Jamie Metz**, Founder and Chair of OneShared.World, former National Security Council and State Department official, and member of the World Health Organization's expert advisory committee on human genome editing.

**John Yoo, J.D.**, Emanuel S. Heller Professor of Law at the University of California, Berkeley.

**Robert Kadlec, M.D.**, Physician and former Assistant Secretary of Health and Human Services.

**David Feith**, Adjunct Senior Fellow at the Center for a New American Security and former Deputy Assistant Secretary of State for East Asia and Pacific Affairs.

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This paper, in its entirety, can be found at <https://report.heritage.org/sr286>

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# Holding China Accountable for Its Role in the Most Catastrophic Pandemic of Our Time: COVID-19

*A Report by the Non-partisan Commission  
on China and COVID-19*

*Convened by The Heritage Foundation  
Chaired by John L. Ratcliffe,  
6th U.S. Director of National Intelligence*

## A Note from the Chairman

The Heritage Foundation's Nonpartisan Commission on China and COVID-19 was formed and founded with a unity of purpose: to review the facts and circumstances related to one of the most devastating pandemics the world has ever witnessed, to assess and calculate the human toll and economic damages caused by the Chinese government, and to make recommendations to hold China accountable.

We prepared this report and the recommendations that follow for consideration by the President of the United States, Congress, and the American people. A nine-member panel of commissioners, comprised of Republicans and Democrats, worked together to present this report unanimously and without dissent.

The goal of our work was to seek the truth, foster accountability, and safeguard the interests and well-being of the American people. To this end, we established four distinct lines of effort designed to unearth the facts, assess the impact, and identify actionable measures.

1. **Data Analysis.** The Commission has undertaken a rigorous analysis of data to ascertain the extensive human and economic costs incurred by the United States due to COVID-19. The aim has been to provide a comprehensive understanding of the pandemic's impact on American society.

2. **The Case.** A comprehensive review of open-source facts and available evidence was a fundamental component of the Commission's work. We have reviewed hundreds of documents and reports produced over the past four years ranging from the U.S. Congress to investigative journalists' reporting and accounts from Chinese citizens. Through the process, we have reviewed, consulted, and considered countless authoritative books, scientific papers, and works from a global network of individuals that unearthed remarkable material. We have also held two virtual hearings and spoken to experts, data analysts, and officials involved with pandemic efforts who worked in the U.S. government in 2020. The purpose of this in-depth examination has been to establish a clear narrative of the events that transpired in China during the critical period from late 2019 through early 2020.
3. **Legal Measures.** In pursuit of accountability and justice, the Commission has evaluated proven and established legal and international causes of actions, principles, and theories to support various potential remedies and case options. We have provided guidance for legal actions that can be taken to address the consequences of COVID-19.
4. **Recommendations for Action.** The Commission has developed actionable recommendations outlining immediate steps for the U.S. government to take in order to hold China accountable and ensure the protection and resilience of our nation. After almost five years of inaction, we call on the President and Congress to take decisive action now.

It has been an honor and a privilege to chair this esteemed Commission. I thank my colleagues for their willingness to serve and provide their expertise. Together, we have strived to honor the values and principles upon which our nation stands and ensure the health and well-being of our citizens.

I am also grateful to The Heritage Foundation for having the leadership and vision to convene our nonpartisan Commission.

John Ratcliffe

Chairman

Nonpartisan Commission on China and COVID-19

6th United States Director of National Intelligence

Former Member of Congress

July 2024

## Executive Summary

The COVID-19 pandemic carries with it enormous human and economic costs to the world that will linger for generations to come. In the pandemic's wake, 28 million lives were lost, dreams were shattered, the vulnerable were impoverished, and economies endured trillions of dollars of losses in damages. The United States alone is estimated to have suffered 1.1 million dead and \$18 trillion in losses from COVID-19.

The Heritage Foundation convened a Nonpartisan Commission on China and COVID-19 (the Commission) to embark on a fact-finding mission to determine the enormous costs to the United States from the pandemic, to look at all the evidence available regarding the virus's origin and spread based on the scientific and operating environment in China, to review and offer legal options, and to provide policy recommendations for the United States to implement based on its findings. The Commission's report does not rule out that many other governments, institutions, and individuals may have played contributing roles in the pandemic, but it finds that China has been in a league uniquely of its own in its active and aggressive opposition to honesty, transparency, and accountability regarding the virus and its spread. This behavior by the Chinese government, more than anything else, was the proximal origin of the COVID-19 pandemic.

In this report, the Commission documents several major facts about the pandemic that contradict the Chinese-propagated narrative. The Commission finds that the balance of available evidence points toward the pandemic's having resulted from an initial spillover resulting from a research-related incident at the Wuhan Institute of Virology (WIV), an institution known internationally for its coronavirus-related research, rather than emerging from wild animals sold at a market in that city.

The Commission finds numerous examples of the Chinese government not taking appropriate steps to secure the WIV from potential contamination. It notes that several scientists at the lab became suspiciously ill and that the Chinese government acted to cover up highly pertinent information about the disease during the critical early weeks and months of the outbreak from their own public, the scientific community, and the world at large. The Commission documents how the Chinese government has destroyed samples, hidden records, imprisoned Chinese journalists for asking basic questions, enforced a gag order on Chinese scientists, and fiercely blocked any meaningful international investigation of the origin of the pandemic. The Commission also finds that China published false data about the outbreak. These and other actions were taken by the Chinese

government despite it's being a signatory to an international agreement that requires it to notify the World Health Organization of public health emergency concerns and to provide timely, accurate, and detailed information about the disease.

All governments and institutions must comprehensively review their actions leading up to and during the COVID-19 pandemic and take appropriate corrective action to minimize current and future risks. Although this process is not as advanced as it could and should be in the United States, significant steps have been taken by both the executive and legislative branches of the U.S. government. More is required. Here again, China's behavior is in a league all its own and puts China, the United States, and the world at great and unnecessary risk.

Given China's refusal to practice accountability, including its obstructionist role in international institutions, efforts like this Commission are critical. While acknowledging the imperfections of other states and institutions, this report strives to assess China's liability and recommend measures to hold China accountable. Here it finds multiple legal grounds on which the Chinese state and various Chinese corporate entities could be held to account. The Commission also outlines 17 policy recommendations that the U.S. government could implement to strengthen deterrence, transparency, and accountability.

While the Commission analyzes the pandemic mostly in the context of the costs to the United States and what the United States can do to hold China to account, its conclusions are not limited to the United States. We encourage other countries to use the model created by this Commission to investigate the human and economic costs of the pandemic to their own societies and explore how they too can hold China accountable for its actions.

Just as establishing accountability and liability is an essential tool in any functioning domestic legal system, so must those principles also be applied in this context. In the face of unprecedented global challenges, the alternative is a perilous gamble on far worse future pandemics that could claim millions or even billions more lives.



## The Unprecedented Global Cost of the Pandemic

The COVID-19 pandemic is considered one of the seven deadliest plagues in world history,<sup>1</sup> inflicting extraordinary human and economic costs across the globe. The head of the International Monetary Fund has called it “a crisis like no other.”<sup>2</sup>

Before looking at the specific cost estimates for the United States, it is therefore imperative that one understands the impact of the pandemic in a global context. As of June 2024, for example, *The Economist* estimated that global excess deaths from COVID-19 had reached 28 million, including more than 1.1 million Americans.<sup>3</sup>

In addition to the immense loss of human life, the economic repercussions from the pandemic have been staggering. The world’s collective GDP fell by 3.4 percent in 2020 alone.<sup>4</sup> Economic output contracted in around 90 percent of countries in the same year.<sup>5</sup>

The World Bank referred to the economic upheaval as “the largest global economic crisis in more than a century” and noted that worldwide poverty had risen “for the first time in a generation.”<sup>6</sup> The pandemic pushed an estimated 97 million people into poverty from 2020 to 2021.<sup>7</sup> Low-income countries were disproportionately hit the hardest.<sup>8</sup>

Global unemployment soared to 6.5 percent in 2020—up from 5.4 percent the previous year.<sup>9</sup> Job losses were not equally spread across the demographic spectrum, as women lost their jobs at greater rates than men according to a World Bank survey.<sup>10</sup> The pandemic erased the equivalent of 255 million full-time jobs through work-hour losses in 2020 alone. These losses were found to be especially acute “in Latin America and the Caribbean, Southern Europe and Southern Asia.”<sup>11</sup> The effect of the pandemic persists to this day: Several low-income regions in Africa and the Arab world were projected to have higher unemployment rates in 2023 than they had before the pandemic.<sup>12</sup>

Children bore a disproportionate burden as a result of COVID-19. The United Nations referred to the pandemic as “the worst crisis for children” that it had seen in its 75-year history.<sup>13</sup> Not only did children face illness and death, but they also experienced the loss of family, isolation due to quarantines and school shutdowns, food insecurity, and challenges with accessing health care for conditions that were not deemed priorities if they were not related to the virus.

Education was hit the hardest. At the pandemic’s peak in 2020, more than 1.5 billion children were out of school worldwide.<sup>14</sup> Total or partial school closures still affected more than 616 million children by 2022.<sup>15</sup> It

was estimated that 70 percent of 10-year-olds in lower-income and middle-income countries were rendered functionally illiterate in February 2022—up from 57 percent before the pandemic.<sup>16</sup> Children in the high-income countries that make up the Organization for Economic Cooperation and Development (OECD) also experienced significant learning loss as mean reading and math test scores declined significantly: Among 15-year-old students in OECD states, 25 percent (one in four) were considered low performers in 2022.<sup>17</sup>

In mental health terms, the pandemic period was associated with a 27.6 percent rise in major depressive disorders and a 25.6 percent rise in anxiety disorders globally among those both young and old. Those most prone to mental illness were the young and women.<sup>18</sup> Some countries even saw a doubling of the prevalence of these mental disorders.<sup>19</sup> The social fabric of families and communities unraveled as people grappled with death, illness, isolation, grief, the loss of jobs and incomes, and general uncertainty.

Long COVID is an often-debilitating illness that occurs in at least 10 percent–20 percent of infections and affects people of all ages including children.<sup>20</sup> Children are regarded as being particularly at risk of developing long COVID;<sup>21</sup> in the United States alone, an estimated 6 million children suffer from the disease.<sup>22</sup>

More than 200 symptoms of long COVID have been identified with impacts on multiple organ systems.<sup>23</sup> The extensive list includes such multi-organ, multisystem, relapsing-remitting symptoms as fatigue, breathlessness, neurocognitive effects, and dysautonomia. While neurological effects were once considered rare, these cases are becoming “increasingly recognized in both adults and children.”<sup>24</sup>

Additionally, a range of radiological abnormalities in the olfactory bulb, brain, heart, lung, and other sites has been observed in individuals with long COVID. Long COVID can also trigger other chronic health conditions such as diabetes and heart or liver conditions.<sup>25</sup> The disease burden spans from mild symptoms to profound disability with the scale making this a huge, ongoing global health care challenge.<sup>26</sup>

The global costs of the pandemic were certainly massive, but because of constraints that include the lack of cost data for individual countries, this report focuses only on dollar costs for the United States. This Commission encourages organizations and governments in other countries to use their nations’ statistics to calculate similar figures. The calculations on the following pages that were developed for the United States provide a road map that other countries can use to create their own cost models and join the U.S.

in holding the Chinese Communist Party (CCP) financially accountable for both its actions and its inaction.

## The Cost of the COVID-19 Pandemic in the United States

This section is intended to help government officials and the public understand the true costs of this devastating pandemic in the United States.

**Totals.** The Commission estimates that as of December 2023, the total cost of the COVID-19 pandemic in the U.S. had reached \$18.007 trillion. Table 1 shows the total costs by major category.

For reference, the total net value of U.S. wealth in 2022 was \$135.555 trillion according to the Federal Reserve.<sup>27</sup> In other words, the total dollar cost of the pandemic thus far is roughly 13 percent of U.S. wealth. The following sections walk through the cost calculations for each category.

**Deaths.** The monetary costs of the deaths from COVID can be calculated using a measure known as the value of a statistical life (VSL). The VSL measures how much more individuals must be paid to take on the additional risk of death from given activities.

VSL figures can be inferred from market or survey data. For example, if a job with an additional risk of death of 1 in 10,000 workers per year pays \$1,000 more per year than a similar job, then the VSL is \$10,000,000. Every 10,000 workers collectively will receive \$10,000,000 (10,000 workers x \$1,000 extra for each worker per year) and, on average, one of them will die. Therefore, \$10,000,000 was paid for the risk of one life lost.

The VSL should not be confused with lifetime income or the profits generated from work. It is a measure of the individual's willingness to accept small increases in the risk of death in return for increases in pay.

Treating the outbreak of COVID as an event that increased the risk of death, we can use the VSL to estimate a dollar figure that, if the money were given to all U.S. households after the outbreak, would be considered fair compensation for the increased risk of death.<sup>28</sup> However, not every death entails the same loss of remaining life. Obviously, older people have fewer years of life left on average than younger people. Additionally, COVID did not affect all age groups equally and had a greater effect on the older population.

Hence, we calculate the VSL for different age groups using a constant value of a statistical life *year* (VSLY) and sum up the VSLYs over the statistically expected remaining years of life. This method treats every year of life equally.

In our calculations, we use a VSLY of \$500,000, which is in line with the figure used by the U.S. Department of Health and Human Services.<sup>29</sup> Dollar

figures for VSLYs far into the future are converted to present values using a discount rate. The discount rate adjusts for the time value of money because a dollar in the future is less valuable than a dollar in the present. The VSL figures reported in Table 2 are based on a discount rate of 3 percent.

The Centers for Disease Control and Prevention (CDC) collects weekly provisional counts for all U.S. deaths including deaths related to COVID-19.<sup>30</sup> From the start of the pandemic in 2020, there have been 984,716 deaths in which COVID-19 was the underlying cause and 1,138,763 deaths in which COVID-19 was one of multiple causes.

However, some people who died from COVID may never have tested positive. Others may have died because of something not directly related to the pandemic—at-risk individuals may have avoided medical care because of potential exposure to COVID-19, for example, or health care providers may have delayed services.

For a more comprehensive number for lives lost to COVID, we therefore looked at the CDC's tracking of "excess deaths" associated with COVID-19—a measure of how much weekly mortality counts exceed what otherwise would have been expected had the pandemic not happened. We use the CDC's measure of excess deaths broken down by age group to capture variation in the increased risk of death across different ages.

Table 2 presents provisional mortality data from the CDC by age group. Mortality rates before the outbreak of COVID are calculated as the average of rates from 2017–2019 and are presented in the "2017–2019 Average Death Rate per 100,000" column. The higher mortality rates that the United States experienced during COVID are shown as an average in the "2020–2022 Average Death Rate per 100,000" column. Multiplying the percentage change in average death rate by the "2020–2022 Population Average" and multiplying that number by three to account for three years of deaths produces the "Excess Deaths Over 3 Years." Again, for all age categories, that totals 1,476,457 excess deaths from 2020 to 2022. Multiplying the excess deaths for each age group by its corresponding VSL gives the total cost of increased deaths.

Adjusting for the changing risk of death over three years of the pandemic using a VSLY of \$500,000 yields a total value of \$8.625 trillion.

**Lost Income.** Comparing economic projections from before the outbreak of COVID-19 with the actual data during it can give an approximation of the pandemic's effect on the entire economy. While it is not a perfect measure because there were other changes in the economic outlook during the same period, the outbreak should represent the dominant amount of new information over the past few years.

TABLE 1

## Total Costs of the COVID-19 Pandemic

Item	Cost (trillions of dollars)
Deaths	\$8.625 trillion
Lost Income	\$1.825 trillion
Chronic Conditions	\$6.026 trillion
Mental Health	\$1.096 trillion
Education Losses	\$0.435 trillion
<b>Total Cost</b>	<b>\$18.007 trillion</b>

**SOURCE:** Heritage Foundation calculations.

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We calculate the income lost to the economy by comparing actual gross domestic product (GDP) data to Congressional Budget Office (CBO) baseline forecasts from January 2020, which were calculated and released just before the pandemic.

GDP measures the value of goods and services produced within the United States and, consequently, the income that Americans generate from that production. It should be noted (1) that nominal GDP can be split into real GDP, which values goods and services at constant prices, and the implicit GDP deflator, which measures changes in the overall price level, and (2) that changes in real GDP and the implicit deflator should be tracked separately so that increases in the price level with no material benefit are not mistaken for increases in real income.

To calculate the pandemic's effect on real GDP, we take the difference between current real GDP data and the CBO baseline and multiply it by the implicit GDP deflator. This produces a data series that values real output using the price levels that were expected in the absence of the pandemic. Subtracting this alternate series from the CBO's January 2020 nominal GDP baseline calculates the nation's lost income while controlling for inflation, which is calculated in a separate section below.

Summing the nominal GDP differentials over the three years of the pandemic produces a reduction in U.S. total output of \$1.825 trillion. Over the period from the first quarter of 2020 to the fourth quarter of 2022, real GDP averaged 2.5 percent below the projections at the beginning of 2020.

**Chronic Conditions.** For most people, a COVID-19 infection results in a few days of flu-like symptoms followed by a recovery back to normal. However, some patients report lingering symptoms for months after infection. This is referred to as “long COVID.”

According to surveys from the CDC and the Census Bureau, about 15 percent of U.S. adults have contracted long COVID at some point.<sup>31</sup> With an adult population of 260.9 million, this equates to 40.2 million cases.

The typical duration of long COVID is still unknown. However, a recent estimate suggests that most symptoms resolve within one year.<sup>32</sup>

The relevant economic measure of the harm from long COVID is the Quality-Adjusted Life Year (QALY).<sup>33</sup> QALYs count the number of years in good health, scoring each year between 1 (perfect health) and 0 (death). We use the same reduction in quality of life from long COVID that is used by Harvard University economist David Cutler and former U.S. Treasury Secretary Lawrence Summers, who use a harm per case of  $-0.25$  to  $-0.35$  based on a comparison to chronic obstructive pulmonary disease.<sup>34</sup>

Using a central estimate of a case of long COVID representing 0.70 QALY for one year and the same value of \$500,000 for the value of a statistical life year that we used previously, the total U.S. harm from long COVID during the three years of the pandemic is \$6.0 trillion.

**Mental Health.** CDC and U.S. Census survey data show that around 25 percent of adults have been reporting symptoms of either anxiety or depression since the COVID outbreak.<sup>35</sup> Whether this was caused by the disease itself or the policies that individual countries implemented to combat the disease is largely a moot point because none of those measures would have been taken had it not been for the disease. The linkage between anxiety and depression symptoms and the prevalence of cases related to COVID-19 is demonstrated by CDC data.<sup>36</sup> The prevalence of anxiety and depression reached above 35 percent between July 2020 and January 2021.<sup>37</sup> Using the adult population of 260.9 million, that is between 65 million (25 percent) and 91 million (35 percent) cases of anxiety or depression.

The CDC says that depression typically affects 16 million adults, or about 6 percent of the population, every year and that anxiety often accompanies depression.<sup>38</sup> This implies that three years of the pandemic resulted in an additional 49 million cases of depression or anxiety (using the low-end number, 25 percent, for this calculation).

Estimates of patients’ willingness to pay for treatment of depression put the figure at around 10 percent of household income.<sup>39</sup> Willingness to pay is the appropriate measure because it captures the full value of fair compensation needed to make someone as well off as he or she would be if COVID had



TABLE 2

**Costs of Increased Deaths from COVID-19 by Age Group**

Age Group in Years	2017-2019 Average Death Rate*	2020-2022 Average Death Rate*	Change from Pandemic	2020-2022 Population Average	Expected Additional Deaths	Value of a Statistical Life (millions of dollars)	Cost per Person	Total Cost (trillions of dollars)
Less than 1	559.3	550.3	-0.01%	3,621,316	-974	\$15.061	-\$4,052	-\$0.015
1-4	23.9	24.9	0.00%	15,359,304	461	\$14.966	\$449	\$0.007
5-14	13.4	14.3	0.00%	41,557,202	1,039	\$14.578	\$364	\$0.015
15-24	71.3	84.8	0.01%	42,900,991	17,418	\$13.872	\$5,632	\$0.242
25-34	130.1	167.7	0.04%	45,692,036	51,449	\$12.953	\$14,585	\$0.666
35-44	196.4	264.0	0.07%	42,977,045	87,200	\$11.762	\$23,864	\$1.026
45-54	396.6	484.5	0.09%	40,580,269	107,010	\$10.240	\$27,003	\$1.096
55-64	885.3	1,042.9	0.16%	42,671,187	201,835	\$8.387	\$39,672	\$1.693
65-74	1,779.6	2,068.6	0.29%	33,293,955	288,625	\$6.225	\$53,966	\$1.797
75-84	4,389.0	5,066.8	0.68%	16,287,943	331,183	\$3.931	\$79,924	\$1.302
85 or more	13,417.6	15,519.8	2.10%	6,203,305	391,211	\$2.037	\$128,459	\$0.797
<b>Total</b>				<b>331,144,555</b>	<b>1,476,457</b>			<b>\$8.625</b>

\*Death rate is per 100,000 people.

SOURCE: Heritage Foundation calculations..

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never happened. Combining that with a median household income of \$74,580 in 2022 puts the mental health costs at around \$1.096 trillion (49 million cases multiplied by \$7,458 in treatment per year multiplied by three years).

**Education.** GDP measures the market value of goods and services produced in an economy in each time period. Services not priced in a market, such as public education, count toward GDP as measured by their cost. During the pandemic, many schools moved to remote learning to satisfy social distancing requirements. Teachers continued to work, so their contribution to GDP was unchanged.

However, remote learning has proved to be not nearly as effective as traditional in-class learning. Students' test scores on standardized assessments declined during the pandemic and have not rebounded to pre-pandemic levels. Average math scores for fourth and eighth graders on the National Assessment of Educational Progress in 2022 were five and eight points lower, respectively, than scores in 2019.<sup>40</sup> Average reading scores were down three points across the board.

These education losses amount to students being one-quarter to three-quarters of a school year behind in their education.<sup>41</sup> Using an annual



figure of \$870 billion in public elementary and secondary school expenditures, this equates to a loss of \$218 billion to \$653 billion worth of education. For our loss calculations, we will take the average of the high-end and low-end figures, which is \$435 billion.

## **Conclusion**

The COVID-19 pandemic has exacted a staggering toll on the United States, both in human lives and in economic terms. The total estimated cost of \$18.007 trillion is a stark reminder of the profound impact this global health crisis has had on the nation. By understanding and acknowledging these costs, we can lay the groundwork for holding accountable those whose negligence or overt actions exacerbated the pandemic's severity.

## The Case for Chinese Government Accountability

The Commission focused on two areas to assess the role the Chinese Communist Party (CCP) played in the COVID-19 pandemic. The first was a review of available facts and evidence surrounding the science and operating environment in China. The second was a review of the actions taken by Chinese authorities to conceal the truth.

### The Science and Operating Environment

After a careful review of the available evidence, it is the view of this Commission that the COVID-19 pandemic very likely stemmed from a research-related incident in Wuhan, China. The Chinese government has obscured much of the relevant record and obstructed all credible international efforts to investigate the origin of the virus, but the available evidence strongly supports a research-related accident.

Although it remains theoretically possible that COVID-19 emerged via zoonosis in the wild<sup>42</sup> or spillover in a wet market<sup>43</sup> (spillover is a virus originating in animals before it passes to humans), there is no evidentiary basis for either of these hypotheses despite extensive testing over four years. The proponents of these hypotheses focus on a spatial analysis of early cases, allegations of two lineages emerging from the market, and the presence of susceptible animals. There are numerous major challenges to these hypotheses. The Worobey et al. Science paper<sup>44</sup> asserting dispositive evidence of a market origin was later refuted by two different authors' peer-reviewed articles that statistically disproved the Worobey et al. spatial analysis.<sup>45</sup> Early case data finally released in 2024 fully refute the double spillover argument and indicate that a single introduction of the virus into humans caused the pandemic.<sup>46</sup> No evidence of infected animals in the market was ever found.<sup>47</sup> In other viral outbreaks, such evidence was found rather quickly and in multiple places along the usual distribution channels and final destinations of these animals.<sup>48</sup>

Other studies observed that the transmission evidence found at the marketplace did not differentiate between a superspreader event among humans and a natural spillover.<sup>49</sup> The genetic and early case data appear to suggest that the virus was already in circulation among human beings before the outbreak associated with the market.<sup>50</sup> And while the SARS-CoV-2 virus conceptually could have emerged naturally<sup>51</sup> from human contact with infected animals in the wild, there is still no evidence of direct zoonotic transfer from a bat or intermediate species.

**Logic and Common Sense.** The virus that caused the COVID-19 pandemic, formally known as SARS-CoV-2, first emerged in Wuhan, China, in the fall of 2019. This city of 11 million people is approximately a thousand miles away from the natural habitat of the horseshoe bats potentially laced with the viruses<sup>52</sup> and a long way from the areas of tropical southern China that are commonly associated with viral spillovers. Moreover, Wuhan is situated in a part of China where relatively fewer people eat wild animals and there is less of a trade in wild animals than there is in some other parts of China.

While Wuhan is far from the natural habitat of the relevant horseshoe bats and from the animal distribution channels that were linked to the 2003 SARS outbreak,<sup>53</sup> it somehow managed to be the one city where the virus emerged, with no known independent introduction anywhere else. At the same time, the city is a leading center for Chinese virology research and home to multiple virology and public health institutes, including the Wuhan Institute of Virology (WIV).<sup>54</sup> The WIV has the largest collection of captive SARS-like coronaviruses in the world and was doing risky research manipulating those viruses under substandard safety conditions.<sup>55</sup> This research included infecting animals, including humanized mice, with these newly created viruses.<sup>56</sup>

Although the WIV presents itself as a civilian institution,<sup>57</sup> the U.S. government stated in early 2021 that the WIV has collaborated on publications and secret projects with China's military, including laboratory animal experiments and coronavirus experiments.<sup>58</sup>

It is difficult for anyone outside of China to have intimate knowledge of experimentation being done at the institute, but we know that the WIV became the focal point for international coronavirus research following the 2003 SARS outbreak.<sup>59</sup> Shi Zhengli, director of the WIV's Center for Emerging Infectious Diseases, and her colleagues had genetically engineered chimeric SARS-like coronaviruses, which sometimes became more virulent in humanized mice compared to viruses collected from nature.<sup>60</sup>

Shi and others at the WIV carried out such work at biosafety level 2 (BSL-2),<sup>61</sup> a much lower tier than that used by Shi's former American collaborator, virologist Ralph Baric, who carried out work at BSL-3.<sup>62</sup> BSL-2 is grossly inadequate for conducting risky viral experiments. The consensus among international scientists is that such research should be conducted at least at BSL-3 and, ideally, at BSL-4.

Furthermore, the SARS-CoV-2 virus contains distinct features and attributes that suggest a research-related origin. Perhaps of all these features, it is the furin cleavage site that attracted the most attention. The

furin cleavage site had never been seen in this subgenus of coronaviruses, known as sarbecoviruses.<sup>63</sup> Studies have found that the furin cleavage site is key to SARS-CoV-2 pathogenesis.<sup>64</sup> There is a strong case to be made that the pandemic virus emerged from research in Wuhan where scientists had proposed to insert furin cleavage sites into novel SARS-like coronaviruses.

**Wuhan Institute of Virology’s Deficient Biosafety Record.** There is a long and copious record of insufficient safety protocols besetting the WIV prior to the outbreak that cannot be dismissed.

In 2017 and 2018, for example, U.S. embassy officials in Beijing sent cables to the State Department warning about safety concerns at the WIV. They were ignored. The cables were prescient, specifically citing the sensitivity of the lab’s work on SARS-like bat coronaviruses and human infectivity.<sup>65</sup> During another U.S. government visit to Wuhan, a National Institute of Allergy and Infectious Diseases official learned that the WIV had no experience operating a high-containment Biosafety Level BSL-4 lab and had to “learn everything from zero.”<sup>66</sup>

The director of China’s Center for Disease Control and Prevention, Dr. Gao Fu, published an editorial in March 2019 in the journal *Biosafety and Health* warning about potential natural, accidental, and deliberate biological threats. He specifically identified laboratory risks:

Non-compliance of approved biocontainment and biosafety protocols could result in accidental or deliberate release of pathogens into the environment....  
[G]enetic modification of pathogens, which may expand host range as well as increase transmission and virulence, may result in new risks for epidemics...  
[such as] synthetic bat-origin SARS-like coronaviruses [that] acquired an increased capability to infect human cells.<sup>67</sup>

In July 2019, the WIV leaders warned that they were facing “urgent problems.”<sup>68</sup>

Despite the biosafety concerns<sup>69</sup> and lax security protocols associated with the institute, dangerous viral research continued apace.

The U.S. State Department noted in a January 2021 fact sheet that it had “reason to believe” that several scientists “inside the WIV became sick in [the] autumn [of] 2019.”<sup>70</sup> Those scientists reportedly exhibited symptoms consistent either with COVID-19 or with common seasonal illnesses, despite a claim by WIV leadership that there were no infections among the staff and students there.<sup>71</sup> Subsequent U.S. news articles have disclosed additional information regarding three WIV researchers who reportedly fell ill before the acknowledged public outbreak of COVID-19 in Wuhan.<sup>72</sup>

### **Match Between 2018 DEFUSE Proposal and 2019 SARS-CoV-2**

**Virus.** In 2021, the online research network DRASTIC released details about key documents associated with a March 2018 grant proposal to the U.S. government for a research project named DEFUSE, which aimed to manipulate coronaviruses at the WIV in ways eerily similar to the genetic profile of what later would be identified as SARS-CoV-2.<sup>73</sup> The U.S. government declined to fund the proposal,<sup>74</sup> which would have been a joint research venture by the New York-based organization EcoHealth Alliance, the WIV, Duke NUS (National University of Singapore) Medical School in Singapore, and the University of North Carolina (UNC). Additional documents obtained in December 2023 by researchers at the organization U.S. Right to Know showed how the early drafts of the DEFUSE proposal reinforced its correlation with SARS-CoV-2.<sup>75</sup>

It is noteworthy that UNC researcher Ralph Baric commented to EcoHealth Alliance chief Peter Daszak in an early draft of the DEFUSE proposal that “[i]n china, might be growin[g] these virus[es] under bsl2. US resea[r]chers [would] likely freak out” if they knew about this.<sup>76</sup>

It is suspicious that in February 2020, after the outbreak of COVID-19, the WIV scientists published a paper about the virus in *Nature* that left out its most important and novel feature: the furin cleavage site,<sup>77</sup> which enables the virus to bind to and release its genetic material into a human cell more efficiently, making it easily transmissible and dangerous.<sup>78</sup> This is particularly puzzling given that the furin cleavage site was something that Shi should have been acquainted with given her involvement with the DEFUSE grant proposal and her prior publications.<sup>79</sup>

Although the U.S. government did not approve the DEFUSE proposal, it is common practice for researchers to seek funding for work that has already begun. The WIV would not have needed to rely on the desired U.S. government funding in order to pursue this dangerous research independently. Without the involvement of experienced foreign parties, China would have been free to do it its own way (at BSL-2) with limited risk-management constraints.<sup>80</sup>

## **The Chinese Communist Party’s Systematic Cover-up**

**Seven Weeks that Changed the World.** Starting in December 2019—at the latest—there were seven weeks during which Chinese officials could have shown good faith and honored their international commitments to try to prevent a domestic epidemic from becoming a global pandemic. They consistently chose to do otherwise. Key facts:

- Chinese officials knew in December 2019 that there was human-to-human transmission of the new virus.
- Chinese authorities aggressively silenced medical personnel, journalists, and other Chinese citizens—at times jailing them—for trying to warn each other and the world about the seriousness of the virus.
- Chinese authorities withheld the genomic sequence of SARS-CoV-2 (the virus) starting on December 27, 2019.
- Chinese authorities withheld vital information from the World Health Organization (WHO), including the type of virus behind the illness, the true number of infected people, and the attested human-to-human transmission, until it was obvious to the whole world that they could not contain the outbreak.
- Chinese authorities issued orders to labs to destroy evidence that could prove incriminating.
- Chinese authorities issued gag orders against academic researchers and scientists that prohibited them from sharing information about the virus.
- The genomic sequence became available only when a Chinese scientist posted it online, in defiance of the official orders, on January 11, 2020. This delay denied other countries the immediate opportunity to begin development of tests, drugs, and vaccines.
- Chinese officials allowed international flights to continue from Wuhan and other Chinese cities despite evidence that the lethal virus could be asymptomatic. This facilitated its global spread.
- Chinese officials blocked international attempts to investigate the origin of the pandemic.

**December 2019.** There is a growing body of evidence that suggests SARS-CoV-2 began circulating in Wuhan in the fall of 2019.<sup>81</sup> Frontline clinicians across multiple Chinese hospitals quickly realized “that the unusual pneumonia they were treating was likely infectious.”<sup>82</sup> One hospital doctor, Dr. Zhang Li, later wrote that by the end of December, “the signs of

human-to-human transmission were already very obvious.”<sup>83</sup> China’s CDC Director General Gao Fu admitted in a March 21, 2021, interview that while “doctors in Wuhan reported early cases to local hospitals but these did not make in to our [national diseases reporting] network.”<sup>84</sup>

Indeed, a few months before the acknowledged outbreak in December 2019, the WIV changed its security protocols, ordered an expensive new air incinerator<sup>85</sup> and ventilation system, and—in the middle of the night—mysteriously took down an online database of 22,000 bat virus samples.<sup>86</sup>

Numerous reports have indicated that researchers at the WIV were infected in the fall of 2019.<sup>87</sup> The virus first circulated in Wuhan no later than November 2019 according to a 2021 U.S. intelligence report.<sup>88</sup> Other data suggest there were cases earlier in 2019.<sup>89</sup> Official Chinese reports, however, claimed the first patient in Wuhan was recorded on December 1, 2019.<sup>90</sup> Later, they changed that to December 8.<sup>91</sup> According to Chinese government documents obtained by the *South China Morning Post* in March 2020, nine November 2019 cases were identified, with the earliest case occurring on 17 November 17.<sup>92</sup>

In the crucial early days of the pandemic, the Chinese government used a powerful apparatus to control and manipulate information about the virus.<sup>93</sup> Starting on December 1, 2019, the use of the terms “SARS” and “shortness of breath” in Chinese social media started to increase, and by December 29, it had peaked.<sup>94</sup> A day later, local authorities in Wuhan issued “an emergency notice to medical institutions” that forbade them from releasing “unauthorized” information about the disease.<sup>95</sup> This ban was quickly rendered ineffective due to social media. Local authorities’ emergency notification “about the severe acute respiratory syndrome (SARS)–like coronavirus” quickly made its rounds on social media.<sup>96</sup> Medical professionals were even criticized for wearing masks at a time when China was denying human-to-human transmission, resulting in unnecessary deaths and further transmissions.<sup>97</sup>

Doctors who first tried to share information about the virus were detained by police and forced to confess to “spreading rumors.”<sup>98</sup> Chinese journalists and activists were also imprisoned for trying to tell the truth to fellow citizens and the outside world about what was happening inside Wuhan.<sup>99</sup> China’s citizens told a story that was very different from the official CCP narrative.<sup>100</sup>

The CCP withheld information, published false data,<sup>101</sup> and refused to share information about health care workers—a key to understanding transmission patterns and developing strategies to contain outbreaks.<sup>102</sup>

On December 24, doctors at Wuhan Central Hospital took fluid samples from the lungs of a patient with pneumonia and sent them to Vision



Medicals, a Chinese genomics company, for testing.<sup>103</sup> Around that time, local doctors sent at least eight other patient samples from hospitals around Wuhan to multiple Chinese genomics companies, including BGI Group.<sup>104</sup>

Chinese medical staff in two hospitals in Wuhan were suspected of contracting viral pneumonia and were quarantined<sup>105</sup> on December 25, providing additional evidence of human-to-human transmission.<sup>106</sup>

On December 27, Vision Medicals reported the analysis of the nearly full genome sequence to the hospital and to the Chinese CDC by phone. The sequence was also shared with the Institute of Pathogen Biology of the Chinese Academy of Medical Sciences in Beijing, which has links to the People's Liberation Army (PLA),<sup>107</sup> for further analysis. The results stated that it was a SARS-like coronavirus of bat origin and that the homology was very high.<sup>108</sup> BGI completed genomic sequencing of the novel coronavirus on December 29.<sup>109</sup> The lab test results all pointed to a SARS-like virus. By December 27, Beijing was aware of the severity of the virus after it was sequenced by Vision Medicals<sup>110</sup> and followed by BGI.<sup>111</sup>

At the same time, China's National Health Commission ordered commercial labs to destroy or hand over virus samples and ordered that research findings be published only after official approval.<sup>112</sup> Health Commission authorities were sent to seize the samples from Vision Medicals.

At about 10 p.m. on December 27, the dean and director of the designated pulmonary infections hospital in Wuhan (Jin Yin-tan) reviewed the SARS-CoV-2 sequence with the WIV, which confirmed its homology with SARS and likely danger.<sup>113</sup>

On December 30, Dr. Li Wenliang sounded the alarm and released initial evidence to other doctors in an online chat group. He warned that they were being silenced and punished by local authorities in Wuhan for "spreading rumours" and "disturbing the public order."<sup>114</sup> Local police used humiliation tactics on whistleblowers.<sup>115</sup>

The crackdown went into full force and continued for months. Police across the country threatened activists and lawyers. Others were jailed<sup>116</sup> or disappeared,<sup>117</sup> risking their lives to tell the truth.<sup>118</sup>

On December 30, the Wuhan Health Commission confirmed<sup>119</sup> the existence of a virus of unknown cause and issued an order to hospitals, clinics, and other health care facilities strictly prohibiting the release of any information about treatment of this new disease.<sup>120</sup> By the end of day on December 30, all 27 known cases were transferred to the negative pressure pulmonary infections ward of Jin Yin-tan hospital, using negative pressure ambulances disinfected after each trip. The precautions were taken after the guidance the hospital received from the WIV on December 27.<sup>121</sup>

On December 31, the World Health Organization's China Country Office picked up a media statement by the Wuhan Municipal Health Commission's website reporting cases of "viral pneumonia" in Wuhan.<sup>122</sup>

**January 2020.** On January 1, 2020, the National Health Commission ordered the WIV not to disclose anything about the epidemic such as testing, experimental data, and results—even to partner organizations and technical service companies.<sup>123</sup> Additionally, sequencing companies were told to stop sequencing, to destroy samples, and not to communicate anything.<sup>124</sup>

On January 3, 2020, Chinese officials provided information to the WHO on the cluster of "viral pneumonia of unknown cause" cases identified in Wuhan.<sup>125</sup> Chinese authorities told the WHO that they had no idea what was causing it.<sup>126</sup> The same day, the National Health Commission sent a secret memorandum to labs banning unauthorized scientists from working on the virus and disclosing the information to the public.<sup>127</sup>

Chinese authorities prohibited the sharing of critical data about infections of frontline health care workers. These authorities also repeatedly stressed that no health care workers were infected with the new virus—an important sign for possible human-to-human transmission used to suggest that the virus was not very contagious.<sup>128</sup>

The CCP did not disclose that the virus could spread through human-to-human transmission until January 20, 2020. Asymptomatic transmission of SARS-CoV-2 is the stumbling block of COVID-19 pandemic control. Transmission from asymptomatic individuals was estimated to account for approximately 60 percent of all transmission.<sup>129</sup>

**Delay in Releasing Viral Sequence/Genome and Admission of Human-to-Human Transmission.** On January 11, a team led by Zhang Yongzhen of the Shanghai Public Health Clinical Center published the genomic sequence on the U.S. website Virological.org.<sup>130</sup> (Two days later, Chinese authorities forced his lab to close for "rectification."<sup>131</sup>) *The Wall Street Journal* broke the news that Chinese scientists had identified a new coronavirus.<sup>132</sup> It was not until after Zhang released the genome that the Chinese government, the Chinese CDC, the Wuhan Institute of Virology, and the Chinese Academy of Medical Sciences raced to publish their sequences.<sup>133</sup> This was a full two weeks after Beijing had been informed.<sup>134</sup>

The delay in the release of the genome stalled recognition of its spread to other countries. The lack of detailed patient data also made it harder to determine how quickly the virus was spreading, thereby undermining efforts to stop or slow its transmission.<sup>135</sup>

By January 10, the number of cases in hospitals was starting to explode. That day, a radiologist in a one Wuhan hospital diagnosed 30 cases. On

January 15, a radiologist in another hospital diagnosed 50 cases by CT-scans, which was more than the official total number of cases since the start of the outbreak (41) as reported by the Chinese authorities. By January 20, CT-scan machines were breaking down under the load.<sup>136</sup>

Despite this explosion of cases, the governor of Hubei province told officials on January 17, citing Xi Jinping's precepts of top-down obedience, that "politics is always No. 1."<sup>137</sup> Shortly after this, and to set a new world record, the Wuhan government went forward with hosting an enormous potluck banquet for 40,000 families<sup>138</sup> in what surely became a massive superspreader event.

Finally, on January 20, a well-known medical doctor appeared on Chinese state television and informed the public of the reality of human-to-human transmission, citing 14 medical staff infections.<sup>139</sup>

It is clear that by the end of December 2019 and through early January 2020, Chinese authorities in Beijing had "access to numerous genomic sequences and whole genomes of the SARS-like novel coronavirus, in addition to clusters of cases, suspected cases and expert physicians' concerns that the viral pathogen was contagious."<sup>140</sup> The amount of quality information available to Chinese policymakers in late December 2019 was substantial from a disease prevention and control perspective.<sup>141</sup>

**Unrestricted Travel.** The Chinese government was similarly late to restrict air traffic. According to the *Global Times*, a CCP news outlet, Xi Jinping gave the order to "impose traffic control and people's movement" in Wuhan and other cities in Hubei province on January 22.<sup>142</sup> The lockdown began the next day.

But it was too late. By January 23, Xi missed the last clear chance to stop the virus from going global. Seven million people had already left Wuhan in January for the Chinese New Year holiday, and outbreaks were growing in more than 30 cities across 26 countries via travels from Wuhan.<sup>143</sup>

Xi's directive stopped flights from Wuhan to other Chinese cities but allowed for the continuation of international flights from Wuhan unabated.<sup>144</sup> There were 21 countries that had direct flights from Wuhan.<sup>145</sup>

Beijing's actions facilitated the virus's spread undetected beyond its borders despite knowledge of its lethality and human-to-human transmission. There were 1,300 direct flights from Wuhan to 17 cities in the United States before the U.S. government restricted travel on January 31.<sup>146</sup>

**Other Important Facts.** Beijing's withholding and censorship of crucial information regarding the virus affects not only China's own population or travelers to China, but also the global scientific community. The WIV virus database with its more than 22,000 samples was taken down in

September 2019. This database, which would have been the most useful in tracking down the origin of SARS-CoV-2, was never released to American researchers.<sup>147</sup>

On February 3, 2020, Xi Jinping gave a speech to the Politburo Standing Committee (PBSC) in which he recounted his requests and instructions on the pandemic starting at a January 7 PBSC meeting. “Party committees and governments at all levels,” Xi said, “must resolutely obey the unified commands, unified coordination, and unified dispatch...of the Central Party Committee to the point that all orders and prohibitions are strictly enforced.”<sup>148</sup> Thus, Xi was giving important orders about the virus outbreak as early as January 7 even as he persisted long thereafter to cover up and play down the matter for the Chinese public and other world leaders.

The CCP hoarded Personal Protective Equipment (PPE). In the early part of the outbreak, Beijing directed Chinese-owned firms located in China and abroad to procure millions of protective masks, medical gowns, and gloves on the international market and ship them back to the mainland. Chinese authorities nationalized the supply chains and manufacturing capacity of foreign companies including General Motors and 3M to produce medical supplies while denying export licenses for their products.<sup>149</sup>

Before the U.S. had access to the viral genome,<sup>150</sup> the Chinese Communist Party was evidently well underway in its vaccine research and development.<sup>151</sup>

General Zhou Yusen, senior PLA researcher and Director of the 5th Institute of the Beijing Academy of Military Medical Sciences (AMMS), worked with the WIV and possibly at the WIV prior to the pandemic.<sup>152</sup> Zhou had a long history as an accomplished coronavirus vaccinologist.<sup>153</sup> On February 24, 2020, he submitted one of the first COVID-19 vaccine patents, which requires access to both the sequence of the SARS-CoV-2 and the live virus itself.<sup>154</sup> The research methodology tied in with the patent indicates that work on a vaccine probably began no later than November 2019.<sup>155</sup> Zhou was reported as having mysteriously died sometime after submitting the preprint of his study adapting SARS-CoV-2 to BALB/c mice and the initial testing of his candidate vaccine in early May 2020 and its publication in July 2020. There was no official PRC government acknowledgement of his death.<sup>156</sup>

China is a signatory to the WHO International Health Regulations (IHR), which were amended in 2005 after the SARS epidemic of 2002–2004.<sup>157</sup> Under the IHR, China was responsible for collecting data about the spread of COVID-19 and for informing the WHO.<sup>158</sup> China is in violation of Articles 6 and 7. Article 6 requires that states first notify the WHO of an event of

public health emergency concern and provide any timely, accurate, and detailed public health information available to it. Article 7 extends this to circumstances that include a state seeing evidence of an unexpected or unusual public health event within its territory that may constitute a public health emergency of international concern even if the origin or source of it is unknown.<sup>159</sup> In the case of COVID-19, China acted in clear violation of both articles.

China's nontransparency and coercion extended beyond its domestic decisions and WHO obligations. China's dispute with Australia was but one example of coercion used by the CCP against a foreign government target. After Australia's then-Prime Minister Scott Morrison called for an international investigation into the origin of COVID-19, China retaliated by imposing trade sanctions that included heavy tariffs on Australian exports.<sup>160</sup> Other such international attempts to investigate the origin of the pandemic were similarly blocked by Chinese officials.<sup>161</sup>

In March 2020, the Federal Bureau of Investigation warned that Chinese government-affiliated cyber actors and nontraditional collectors were "observed attempting to identify and illicitly obtain valuable intellectual property (IP) and public health data related to vaccines, treatments, and testing from networks and personnel affiliated with COVID-19-related research."<sup>162</sup> The FBI added that "[t]he potential theft of this information jeopardizes the delivery of secure, effective, and efficient treatment options."<sup>163</sup>

## Conclusion

Wuhan doctor and COVID-19 whistleblower Dr. Li Wenliang died on February 7, 2020, at the age of 33, leaving behind a pregnant wife and young son. In an interview before his death, he said: "If the officials had disclosed information about the epidemic earlier, I think it would have been a lot better. There should be more openness and transparency."<sup>164</sup>

Despite obligations to inform other states about the health crisis, China's government did not act transparently. It repeatedly took steps that allowed the virus to spread despite its obligation to inform other states about the health crisis. Such negligent actions ran the gamut from blocking the sharing of relevant scientific data, to knowingly lying to the WHO and the international community about human-to-human transmission, to allowing international flights out of affected cities. These actions also made it more difficult to ascertain the origin of the virus, casting all the more doubt on the regime's claims regarding the origin.

As one scholar has observed, “The characteristics of the Chinese political system, preoccupied with maintaining stability and quick to suppress unwelcome opinions and signals, were ill-suited for handling an outbreak that necessitated public involvement from the outset.”<sup>165</sup>

## China's Legal Culpability

It is the belief of this Commission that the Chinese government and its affiliates can be and should be held liable for damages to the United States and its people caused by Chinese negligence and malfeasance related to the COVID-19 pandemic. Any action to hold China or its controlled corporate entities accountable for the devastation of the COVID-19 virus will have to confront the formidable obstacles posed by the U.S. Foreign Sovereign Immunity Act (FSIA), which mandates that foreign states—and their instruments and agents—“shall be immune from the jurisdiction of the courts of the United States and of the States” with certain exceptions.<sup>166</sup>

The Commission finds that a number of potential causes of action (and attendant areas of factual inquiry) could be brought to hold China accountable for its role in the COVID-19 pandemic consistent with FSIA. The success of an individual case would turn on the development and marshalling of the key facts necessary to overcome FSIA immunity. While, again, the Commission believes that China can be held accountable within the strictures of FSIA, that is a difficult process. The Commission therefore believes that FSIA should be revised in a narrow, tailored, and appropriate way to bring direct accountability in the extraordinary and unique context of global pandemics.

## Possible Causes of Action Under FSIA

### A. FSIA's Ambit.

1. A “foreign state” is defined to include the state itself and its “political subdivisions” (organs dedicated largely to governance functions).<sup>167</sup> It also includes the state’s “agencies or instrumentalities,” which are separate legal persons or entities that are either an “organ” of a foreign state or “a majority of whose shares or other ownership interest is owned by a foreign state.”<sup>168</sup> Four exceptions to FSIA’s broad immunity are relevant here.
  - a. First, under the “commercial activity exception,” a foreign state is not immune based upon:
    - a commercial activity carried on in the United States by the foreign state;



- an act performed in the United States in connection with a commercial activity of the foreign state elsewhere; or
- an act outside the territory of the United States in connection with a commercial activity of the foreign state elsewhere and that act causes a direct effect in the United States.<sup>169</sup>

An activity is “commercial” “when a foreign government acts, not as a regulator of a market, but in the manner of a private player within it.”<sup>170</sup> “[A]n effect is *direct* if it follows as an *immediate* consequence of the defendant’s...activity.”<sup>171</sup>

- b. Second, there is no immunity for “personal injury or death, or damage to or loss of property, occurring in the United States and caused by the tortious act or omission of that foreign state or of any official or employee of that foreign state while acting within the scope of his office or employment.”<sup>172</sup> Relevant here, the “entire tort” must have occurred within the United States.<sup>173</sup> But there is an exception to this exception that applies where the conduct in question is “based upon the exercise or performance or the failure to exercise or perform a discretionary function regardless of whether the discretion be abused” or the relevant claim arises “out of malicious prosecution, abuse of process, libel, slander, misrepresentation, deceit, or interference with contract rights.”<sup>174</sup> In FSIA parlance a “discretionary act” is a deliberate policy judgment.<sup>175</sup>
  - c. Third, there is no immunity for “an act of international terrorism in the United States.”<sup>176</sup> FSIA imports the criminal law definition of international terrorism.<sup>177</sup>
  - d. Finally, a foreign state (or its component) can waive its FSIA immunity.<sup>178</sup>
2. Even if FSIA’s immunity is overcome, FSIA presents four additional complications to any cause of action.
- a. As an initial matter, FSIA provides a specific scheme for service of process to secure personal jurisdiction.<sup>179</sup> The Chinese government has excelled at complicating service of process under these

procedures. Service of process is not likely to present an insurmountable barrier but may well require the cooperation of the Department of State and motions practice before a court.

- b. Even if there is no immunity under FSIA, it absolutely precludes the recovery of punitive damages.<sup>180</sup> It also almost certainly precludes many forms of injunctive relief.
- c. FSIA grants federal district courts original jurisdiction over any action involving a “foreign state.”<sup>181</sup> Any state court action is removable on this basis.<sup>182</sup> Such action shall be tried without a jury.<sup>183</sup>
- d. Independent of liability, FSIA restricts the satisfaction of judgments. The general rule is that “property in the United States” is immune from “attachment, arrest, and execution.”<sup>184</sup> An exception exists where “the property is or was used for the commercial activity upon which the claim is based.”<sup>185</sup> A broader exception exists for “any property in the United States of an agency or instrumentality of a foreign state engaged in commercial activity in the United States” where “the judgment relates to a claim for which the agency or instrumentality is not immune by virtue of section 1605(a)(2)...or (5)...regardless of whether the property is or was involved in the act upon which the claim is based.”<sup>186</sup>

## B. Potential Parties.

1. **People’s Republic of China (PRC).** The Foreign Sovereign Immunities Act does not immunize the PRC against the claims and allegations arising from the spread of the COVID-19 virus. The PRC’s acts and omissions that caused the global spread of COVID-19 were tortious, commercial, and nondiscretionary in nature, and they caused direct injury, property damage, and death within the United States. Claims premised on conduct of these sorts fall within recognized exceptions to sovereign immunity under 28 U.S.C. §§ 1605(a)(2) and § 1605(a)(5).

Additional defendants must fit applicable FSIA exceptions by principally carrying on commercial activity directly in the United States that is bound up in the actionable course of conduct. The Commission believes that two Chinese airlines qualify as additional defendants that would not be entitled to immunity under the FSIA.

2. **China Southern Airlines Company Ltd.** “China Southern” is a company that does business in the United States and accordingly has subjected itself to U.S. jurisdiction. Incorporated and headquartered in Guangzhou, China Southern is a state-owned entity with the government of the PRC holding a majority stake in the business. China Southern is directly overseen by the state-owned Assets Supervision and Administration Commission of the State Council. Its filings with the U.S. Securities and Exchange Commission clarify that “[t]he interests of the Chinese government in the Company...may conflict with the interests” of shareholders.<sup>187</sup> China Southern operates worldwide with 224 destinations<sup>188</sup> including U.S. cities Los Angeles, New York, and San Francisco. Through China Southern, the PRC engages in a traditional commercial activity of owning and operating a civilian airline open to cargo and travelers across the globe including those flying to and from the United States. As a condition of its right to operate flights into the United States, China Southern waived its sovereign immunity.<sup>189</sup>
3. **China Eastern Airlines Company Ltd.** “China Eastern” is a company that does business in the United States and accordingly has subjected itself to U.S. jurisdiction. Incorporated and headquartered in Shanghai, China Eastern is a state-owned entity with the PRC holding a majority stake in the business. The airline’s website lists it as “one of the three state-owned backbone airlines of China.”<sup>190</sup> China Eastern operates internationally with destinations in the U.S. including Chicago, Los Angeles, New York, and San Francisco. Through China Eastern, the PRC engages in a traditional commercial activity of owning and operating a civilian airline open to cargo and travelers across the globe including those flying to and from the United States. As a condition of its right to operate flights into the United States, China Eastern waived its sovereign immunity.<sup>191</sup>

The Chinese National Pharmaceutical Group (Sinopharm), Chinese manufacturers of PPE equipment, and other possible defendants should also be considered.

### C. Prior Successful COVID Cases.

The only COVID-19 claims of which we are aware that have survived FSIA immunity, involving China’s role in hoarding PPE supplies, were plead

under the third commercial activity exception theory (an act outside the territory of the United States in connection with a commercial activity of the foreign state elsewhere that caused a direct effect in the United States).

The first case is *State of Missouri v. The People's Republic of China*.<sup>192</sup> There, Missouri sued the PRC alleging public nuisance, abnormally dangerous activities, breach of duty by allowing transmission of COVID-19, and breach of duty by hoarding PPE. Although the District Court dismissed for lack of jurisdiction under FSIA, the Eighth Circuit held that each defendant was a “foreign state” under FSIA and that the FSIA applied to the first three claims but reversed the District Court’s dismissal of Missouri’s hoarding claim, holding that the FSIA’s commercial activity third exception applied to the PPE hoarding claim. The Eighth Circuit remanded the case to the District Court for further proceedings consistent with the opinion, giving Missouri an opportunity to try to prove that the PRC hoarded PPE, that their anticompetitive actions were commercial in nature, and that their behavior had a direct effect in the United States.

Similarly, the State of Mississippi sued the PRC in federal district court in a two-count complaint in 2020, claiming that the PRC both violated the Mississippi Consumer Protection Act by covering up the seriousness of COVID-19 and hoarding PPE and violated the state’s antitrust law by “restraining or attempting to restrain the freedom of trade concerning PPE.”<sup>193</sup> On March 5, 2024, the clerk of the court entered a default judgment against the defendants. The next step in the proceedings is a damages hearing.<sup>194</sup>

#### D. Specific Possible Causes of Action.

1. **Negligence.** A claim could be brought against the PRC and similar commercial entities conducting business in the United States, such as China Southern Airlines and China Eastern Airlines, for traditional common law negligence. These defendants had a nondiscretionary duty, under World Health Organization guidelines and other objective standards, to reasonably inform the public of pending disasters and reasonably maintain safe protocols. China breached its duties by failing to exercise due care in conducting risky viral research, by negligently misrepresenting facts about the virus beginning in December 2019, by allowing individuals from areas within China known to have COVID-19 infections to travel abroad, and by transporting for profit—without adequate warnings—infected individuals to the United States via China Southern and China Eastern, thereby causing COVID-19 to spread. As a direct and proximate result of the defendants’ conduct of

their commercial activities, millions of Americans suffered injury to their persons and property.

2. **Strict Liability for Abnormally Dangerous Activities.** This claim could be brought against the PRC and other directly related defendants, such as the Wuhan Institute of Virology, for conducting liability for abnormally dangerous activities. Anyone who “carries on an abnormally dangerous activity is subject to liability for harm...resulting from the activity, although he has exercised the utmost care to prevent the harm.”<sup>195</sup> Recent evidence of coronavirus research and biosafety concerns in the Wuhan Institute of Virology and Chinese laboratories more generally make it plain that the PRC was engaged in abnormally dangerous activities. These activities were not those of a sovereign, but those of a market actor that financially supported dangerous commercial risk-taking in scientific experimentation. Conducting such research is not inherently sovereign; it is a commercial activity that other actors such as universities, pharmaceutical companies, and private laboratories can undertake.
3. **Public Nuisance.** This claim could be brought against the PRC, China Southern, China Eastern, and other entities with direct operations in the United States under a common law public nuisance claim. The simple facts surrounding COVID-19 point toward PRC culpability. The virus behind the pandemic emerged in the same Chinese city where the Wuhan Institute of Virology, a research lab for SARS-like viruses, is located. Scientists at this lab a year before the outbreak proposed creating viruses with key features similar to SARS-CoV-2. This lab had inadequate biosafety conditions that were not ideal to contain a virus like SARS-CoV-2. More natural theories of the origin of the virus, such as its coming from wild animals at a market, are not strongly supported by the available evidence.<sup>196</sup>

When the disease began to infect the population, rather than restrict its spread, the PRC attempted to conceal its source and severity. Meanwhile, the PRC, through China Southern and China Eastern, continued commercial flights abroad, effectively exporting the virus to countries like the U.S. Defendants’ acts and omissions created “a significant interference with the public health, the public safety, the public peace, the public comfort or the public convenience.”<sup>197</sup> The defendants collectively operated commercial airlines in a manner that

knowingly or recklessly transported a deadly, highly transmissible virus to the United States. Defendants' activities were the direct cause of trillions of dollars in economic losses, untold numbers of infections and nonlethal harm, and more than a million American deaths.

4. **Anticompetitive Behavior.** This claim could be brought against the PRC under federal or state law for anticompetitive behavior in the hoarding and sale of personal protective equipment under state law. To be sure, states normally are not antitrust defendants, but this case is different precisely because China is not acting as a state, but rather as a market participant. From January 23 through January 30, 2020, the PRC initiated the acquisition of a significant portion of the global face mask supply and simultaneously prevented personal protective equipment from being exported outside China even as it made efforts to buy up much of the world supply of PPE.<sup>198</sup> The little PPE that China sold abroad was faulty and inadequate, as the PRC kept quality materials for itself while selling defective equipment at inflated prices to other nations including the U.S. The PRC also assumed control of factories within China that were making PPE for American customers, including 3M, and then directed their production.

The PRC had a duty not to hoard PPE and not to provide ineffective PPE to medical providers. The PRC's commercial actions in the market for personal protective equipment caused financial injury to other participants in the market for personal protective equipment, including health care providers in the United States, as well as physical injury to persons deprived of adequate PPE. The PRC relied on anticompetitive behavior not only to give China an unfair advantage in preparing for the fallout from COVID-19, but also to wring from customers in the U.S. an unearned profit inflated by a need that U.S. customers could not foresee—and that the PRC's own recklessness had created. Again, Missouri's claims under this theory survived a motion to dismiss under FSIA.<sup>199</sup>

5. **Fraudulent Misrepresentation.** This claim could be filed against China Southern Airlines and China Eastern Airlines regarding public comments made by either entity relating to COVID-19 under common law tortious conduct liability for fraudulent misrepresentation.

Public comments from companies regarding COVID-19 warrant action under a tort claim of fraudulent misrepresentation. "One who

fraudulently makes a misrepresentation of fact, opinion, intention or law for the purpose of inducing another to act or to refrain from action in reliance upon it, is subject to liability to the other in deceit for pecuniary loss caused to him by his justifiable reliance upon the misrepresentation.”<sup>200</sup> State-owned Chinese businesses with information about the true extent and severity of COVID-19 and its effect on the population prior to a general understanding in the United States of the virus’s severity are liable because their public statements misrepresented the severity of the dangers of the virus, notably that the virus was novel and that the situation was in flux and subject to change, despite a clear understanding within the PRC of the magnitude and dangers of the virus.

6. **Civil RICO Violations Under 18 U.S.C. § 1961 *et seq.*** This claim could be brought against China Southern Airlines and China Eastern Airlines for civil Racketeer and Corrupt Organization Act (RICO) violations. From December 2019 through February 2020, the PRC made a series of intentional misrepresentations to the international community regarding COVID-19, including that the virus’s origin was unknown, that Chinese researchers had not identified or sequenced the virus, and that neither person-to-person nor asymptomatic transmission was a feature of the virus. The airline defendants repeated these false statements and fraudulently concealed from passengers and foreign regulators the dangers of spreading COVID-19.

The PRC, in conjunction with the airline defendants, engaged in a pattern of fraudulent and anticompetitive conduct that furthered a criminal enterprise in violation of 18 U.S.C. § 1961 *et seq.* A potential plaintiff should marshal all available evidence of false material statements being used for fraudulent ends such as obtaining commercial travelers or positioning within a market. Defendants’ pattern of criminal conduct, sustained over multiple months, enabled the defendants to corner the market for personal protective equipment and to profit from the continued commercial transportation of infected persons abroad, including to numerous locations within the United States. Defendants’ fraudulent misrepresentations and anticompetitive conduct were the sole direct cause of plaintiff’s economic losses in the market for PPE if appropriate to the plaintiff and proximate cause of illness and death for millions of individuals worldwide including in the United States.



## **E. Relief Sought.**

For preliminary relief, plaintiff(s) should seek a Mareva injunction/freezing order to avoid asset dissipation. For final awards, plaintiff(s) should seek (i) restitution/disgorgement; (ii) any authorized civil penalties; (iii) actual, direct, and/or consequential damages; (iv) costs of litigation; and (v) prejudgment interest. As for prospective injunctive relief, it is doubtful that courts can order such relief.

## **Revisions in FSIA**

The Commission finds that FSIA, properly understood, would not bar a cause of action against China and its instrumentalities. Nevertheless, in the interests of clarity, the Commission believes Congress should pass legislation to remove a foreign sovereign's immunity in the specific context of the extraordinary circumstances of global pandemics that lead to more than one million excess deaths of American citizens and residents and are caused by a foreign state.

There is precedent for such an approach. The Justice Against Sponsors of Terrorism Act<sup>201</sup> was passed in 2016 in response to overwhelming concern that FSIA unduly restricted Americans in their quest for judicial recourse for September 11.<sup>202</sup> Notably, this act passed over President Barack Obama's veto.<sup>203</sup>

There has been some consideration of bringing in a bill directly targeting China for its past conduct and removing its immunity relative to COVID-19.<sup>204</sup> This raises complex decisions concerning consistency with the customary international law of sovereign immunity. It also raises the consideration that any action abrogating FSIA immunity would have considerable economic impact by making it considerably more difficult for Chinese companies to do business in the United States. Accordingly, the Commission proposes a middle course—abrogating FSIA for world catastrophes on the scale of the COVID-19 pandemic that have a sizable effect in the United States. Proposed language for such language would be:

The district courts of the United States shall have original and exclusive jurisdiction over any case in which money damages are sought against a foreign state for physical or economic injury to person, property, or business occurring in the United States following any reckless action or omission (including a conscious disregard of the need to report information promptly or deliberately hiding relevant information) of a foreign state, or of any official, employee, or

agent of that foreign state while acting within the scope of his or her office, employment, or agency, that caused or substantially aggravated any global pandemic in the United States regardless of where the action or omission occurred; of a foreign state that failed to carry out or allow for a comprehensive, unfettered investigation provided, that the biological agent underlying the global pandemic was the causative agent of more than 1,000,000 excess deaths in the United States directly or indirectly caused by the pandemic.

Such a provision could be inserted as an amendment to the existing FSIA framework. Other revisions would need to be considered to provide trial by jury, the availability of punitive damages, attachment of assets, and ease of service. (One idea for the attachment of assets would be to use the precedent of the terrorism exception in the FSIA, which allows any American who wins damages judgement against a state sponsor of terrorism to enforce it against the commercial assets of both the state sponsor itself and any state-owned enterprises controlled by that state sponsor. This idea has been proposed in the context of would-be FSIA amendments relating to Chinese state-backed intellectual property theft and is equally meritorious for this proposed pandemic carveout.<sup>205</sup>

Consideration should be given to some mechanism by which the United States could suspend the operation of any exception made to FSIA if the national interest so required. A possible approach would be a modified application of *The Charming Betsy* approach.<sup>206</sup> Under that approach, the modifications to FSIA would not apply in any case where the Attorney General and the Secretary of State both filed certificates personally certifying that the action was contrary to the interests of the United States. Factors could be provided for their consideration such as whether the state conducted a comprehensive and unfettered investigation and made the results of that investigation public.

## Policy Recommendations for the United States to Hold China Accountable for its Role in the Covid-19 Pandemic

With more than enough evidence demonstrating the Chinese Communist Party's central role in the devastation of the COVID-19 pandemic, American leadership is required to promote accountability, restitution, and future global public health. Inaction incentivizes the CCP only to persist in its nontransparent, noncooperative, and even hostile behavior. Both President Donald Trump and President Joe Biden committed to holding the CCP accountable, as have lawmakers in Congress, yet no meaningful action has resulted. The time has come to fulfill those promises.

The Heritage Foundation Nonpartisan Commission on China and COVID-19 has considered numerous courses of action, weighing not only the ability to advance executive actions or enact legislation in the current political environment but also the trade-offs inherent in any course of action. These final recommendations are designed to decrease the odds of a similar pandemic by establishing strong mechanisms for deterrence, transparency, and accountability.

### Recommendations for Congress

**1. Establish a bipartisan U.S. National COVID-19 Commission.**

Congress should create a commission and fund it through budget offsets. Efforts have been made to set up a commission like the 9/11 Commission, but they have stalled.<sup>207</sup> The Heritage Foundation Nonpartisan Commission on China and COVID-19 believes it is imperative to create such a panel following an event of this magnitude. The commission would be multifaceted, and its duties would include a review of China's negligence and cover-up as well as an evaluation of the domestic policies that were implemented once COVID-19 arrived in the United States. We strongly encourage other nations to develop their own commissions to conduct similar reviews to hold China accountable.

**2. Create a bipartisan Reparations/Compensation Task Force to cover claims against China.** U.S. citizens deserve restitution from China for the pain and suffering they have experienced because of COVID-19. Historically, several globally recognized models have been established to assess accountability for and offset large-scale

damages due to the aggression or negligence of governments. These have ranged from the Claims Conference for the German Holocaust to the U.N. Compensation Commission covering Iraq's 1990 invasion of Kuwait. Had it been enacted, Congress's proposed Chinese Government COVID-19 Accountability Act could have been used to secure damages from China.<sup>208</sup> The Task Force could be combined with the National COVID-19 Commission proposed in Recommendation 1 or set up as a separate entity.

3. **Facilitate avenues for the filing of civil claims against the People's Republic of China.** Congress must explore opportunities for expanding U.S. federal court jurisdiction such that it would allow Chinese individuals or agencies to be held liable for U.S. civil claims.<sup>209</sup> Similar to what has been proposed in the CCP Wrongful Death Accountability Act of 2023,<sup>210</sup> this would provide compensation to civilians harmed by the COVID-19 pandemic through a deduction on interests or debts owed to China or through deductions from foreign aid funds to China.

Although liability is possible under the current text of the Foreign Sovereign Immunities Act, the Commission recommends that Congress pass and the President sign the following amendment:

The district courts of the United States shall have original and exclusive jurisdiction in any case in which money damages are sought against a foreign state for physical or economic injury to person, property, or business occurring in the United States following any reckless action or omission (including a conscious disregard of the need to report information promptly or deliberately hiding relevant information) of a foreign state, or of any official, employee, or agent of that foreign state while acting within the scope of his or her office, employment, or agency, that caused or substantially aggravated any global pandemic in the United States regardless of where the action or omission occurred; provided, that the biological agent underlying the global pandemic was the direct or indirect causative agent of more than 1,000,000 excess deaths in the United States.

4. **Pass the BIOSECURE Act to begin decoupling U.S. government and commercial supply chains from Chinese state-backed companies.** This bill would restrict the U.S. government and U.S. government contractors from continuing to do business with Chinese

“biotechnology entities of concern” that have ties to the Chinese Communist Party, state, and military.<sup>211</sup> Introduced early this year with bipartisan support in the House and Senate, the bill is still pending in both chambers.

Eventually, the reduction of American dependence on foreign countries like China to produce pandemic-related needs like PPE and pharmaceuticals would also enhance America’s resilience. This enhancement of American resilience would in turn be to the advantage of U.S. national security and public health interests.

5. **Pass legislation to establish an audit of all U.S. government funding for biomedical and related research activities in China, structured according to a rebuttable presumption that such research shall be discontinued unless relevant sponsors can demonstrate that their research projects are overwhelmingly in the public interest and entail extremely low risk of harm.**

The goal would be to ensure that the United States does not fund dangerous research in uncontrolled environments with insufficient safety and security equipment and protocols or research that could be weaponized by the Chinese military and security services. This standard would be applied to all future and existing biomedical and related research activities in China supported by U.S. federal grants or educational and research institutions that receive federal funding. This would include any direct funding through a federal award or indirect funding through sub-awards coming from organizations receiving federal funding and subcontracting work to China. For all existing research, sponsors would have one year to rebut the presumption that their research poses unacceptable risks. A U.S. government select commission, composed of national security practitioners and experts as well as scientific and biomedical practitioners and experts, would be constituted to review applications to initiate or continue biomedical and related research in China. At least half of the commissioners would be national security practitioners and experts. The committee membership would be a mix of executive branch, U.S. Senate, and U.S. House of Representatives appointees. (Congressional appointees should be made by majority and minority leaders in their respective chambers.) Research projects that failed to rebut a presumption of harm would be suspended and/or denied.

As Chinese researchers continue to conduct highly lethal and risky research at substandard or insufficient biosafety-level research labs, U.S. taxpayer dollars should not be used to fund research in a country that does not uphold basic research and transparency protocols. These problems are political and systemic at least as much as they are technical and scientific, given the nature of the single-party autocracy that governs all scientific activity in China.

6. **Amend the Chemicals and Biological Weapons Control and Warfare Elimination Act to enact two-phased sanctions on entities that fail to maintain their biological facilities and that withhold data.** Those entities, such as the Wuhan Institute of Virology and the Chinese Academy of Sciences, should be held to account for failing both to maintain basic safety standards and to share relevant data. A two-phased sanctions regime can be enacted against such entities. Remedial action can be taken over a period of time after a determination that a biological or chemical event has occurred. Congress can order an investigation into that event and can determine whether the event was caused by gross or significant negligence by a foreign entity.<sup>212</sup>
7. **Work closely with the National Security Commission on Emerging Biotechnology.** Established by Congress and charged with conducting a review of how advancements in emerging biotechnology and related technologies will shape current and future activities of the Department of Defense, the advisory Commission will provide recommendations for action by Congress and the federal government in December 2024. We anticipate that these recommendations will be extremely important and suggest that our recommendations as well as theirs be considered together.

## Recommendations for the President

1. **Demand as a diplomatic priority that China allow a comprehensive, unfettered scientific and forensic investigation into COVID-19's origin in China.** International experts need to conduct research and share the results in an open and transparent manner. To this day, the Chinese government has prohibited a formal investigation of the pandemic's origin. In 2020, the United States, allied nations, and international scientists repeatedly called on China to

provide access to all information available to determine the source of the novel virus in order to determine its lethality and trajectory and begin the development of a vaccine and therapeutics. In 2021, leaders at the G-7 Summit called for a transparent, expert-led COVID-19 study. That has not happened. Instead, China has blocked the work of the WHO Scientific Advisory Group on the Origin of Novel Pathogens (SAGO). China's continued obfuscation and aggressive prevention of any meaningful investigation into the pandemic's origin are not just an affront to the victims of COVID-19 and their families; they also pose a threat to international peace and security.

2. **Impose economic sanctions on Chinese officials and entities associated with the COVID-19 cover-up.**<sup>213</sup> In the spirit of the Li Wenliang Global Public Health Accountability Act and the Coronavirus Origin Validation, Investigation, and Determination Act of 2023,<sup>214</sup> the U.S. government should impose sanctions against (1) senior Chinese officials determined to be directly complicit in the distortion and concealment of information related to the COVID-19 pandemic and (2) individuals who assisted in and/or supported the distortion and concealment of information. Additionally, the Secretary of State and the Secretary of Treasury should investigate sanctions against the Wuhan Institute of Virology, the Chinese Academy of Sciences, the National Health Commission, the Academy of Military Medical Sciences, the Chinese Academy of Medical Sciences, the Wuhan Institute of Biological Production, and their extensive networks of state, academic, and commercial affiliates for activities relating to the cover-up of COVID-19 and for engaging in undeclared, classified biological weapons research and development for the Chinese military in possible violation of U.S. Presidential Executive Order 13382 on the proliferation of weapons of mass destruction.<sup>215</sup>
3. **Recognize that the COVID-19 pandemic was an epochal event, similar to the dawning of the nuclear age and necessitating comparably significant changes in U.S. law, policy, diplomacy, government, commerce, and academic affairs.** Gain-of-function technologies of the kind that emerged only in the past 10 to 15 years—where the deadliest viruses can conceivably be fused with the most infectious ones—appear to pose a species-level risk to human life. The gain-of-function risk on pathogens of pandemic potential is that one mistake in one place—let alone one deliberate act by some state or



nonstate actor—is all that it takes. Once a virus of sufficient infectiousness and deadliness escapes a lab, there may be nothing humanity can do to stop it. As the dropping of the atomic bombs at Hiroshima and Nagasaki necessitated the establishment of new domestic and international norms, standards, and institutions, so the example of COVID-19 is more than enough to justify dramatic public concern and policy innovation in biosecurity, involving everything from gain-of-function funding to laboratory safety standards, international transparency norms, technology controls, and more. Yet very little such innovation is happening. Overcoming this failure is a basic obligation of national leadership.

4. **Include biotechnology as a sector restricted for purposes of U.S. outbound investment into China, pursuant to Executive Order 14105 of August 2023.**<sup>216</sup> The order should be expanded to cover biotechnology, and Congress should pass legislation to strengthen restrictions on U.S. government and private-sector investments in Chinese sectors that include biotechnology. China has recently enacted wide-reaching policy changes that have increasingly redefined biological research within its national security framework. In 2017, Beijing said that special government funding would be made available for biological research as part of the country’s “military–civil fusion” drive—a national program to integrate civilian technology and research into the People’s Liberation Army for military use.<sup>217</sup> U.S. Department of Energy officials warned their National Institutes of Health counterparts about the national security risks posed by gene editing and its possible uses by hostile foreign adversaries, including China.<sup>218</sup> As a result of this threat, it is critical that the U.S. government closely scrutinize U.S. biotech investments in China through any new outbound investment regime or law passed by Congress.
5. **Task the U.S. Intelligence Community with prioritizing the collection and analysis of data on COVID-19’s origin, working alongside allies including “Five Eyes” partners Britain, Canada, Australia, and New Zealand.** As part of this process, conduct an aggressive internal “lessons learned” review, augmented by independent scientific and national security experts, to study intelligence-related shortcomings since the outbreak of COVID-19 and biosecurity and biosurveillance in general. Biological intelligence, or BIOINT, should be made a core discipline of the U.S. Intelligence Community, endowed with a highly diverse array of sources and methods.

As an additional part of this process, comply fully (and belatedly) with the COVID-19 Origin Act of 2023. That law requires the Office of the Director of National Intelligence (ODNI) to “declassify any and all information relating to potential links between the Wuhan Institute of Virology and the origin of the Coronavirus Disease 2019 (COVID-19” and submit to Congress an unclassified report “with only such redactions as the Director determines necessary to protect sources and methods.”<sup>219</sup>

6. **Greatly enhance early detection and preparedness.** The U.S. announced a five-year plan to prepare for the next pandemic in its *2024 U.S. Global Health Security Strategy*. The plan seeks to expand the U.S.’s formal global health security partners from 19 states to 50 and to bolster partners’ capabilities to identify and respond to diseases through improved testing, surveillance, lab capacity, and immunizations. The “whole-of-government” strategy commits to employing the private and public sectors at the local, national, regional, and international levels to strengthen health and research systems.<sup>220</sup> This is a good start, but far more is required. Executive branch agencies should provide global protocols for the prevention of future pandemic-related events and a clear explanation of the consequences for failure to follow these protocols.

The President should facilitate a public–private partnership centered around biothreat detection. The President should also attempt to globalize this network with the help of trusted allies and partners. Building an effective early warning system against natural or man-made pathogens and outbreaks must be a core national defense and national security function and not merely a public health activity of the United States and its partners<sup>221</sup> Biological surveillance and biological intelligence (BIOINT) can and must be made capable of detecting pathogens of pandemic potential before clinical cases accumulate in hospitals. It must also, using intelligence sources and methods as well as next-generation genomic analytic techniques, develop a means of reliably discerning between natural and artificially enhanced pathogens as a key first step toward deterrence. The United States must acquire a capability for attributing the origin of biological threats that is analogous to its capabilities to attribute the origin of nuclear threats.

**7. Establish a new framework for scientific research and collaboration, and build collective resilience with allies and partners.**

Host a presidential summit with allies and partners to review the impact of COVID-19 and launch a comprehensive strategy of collective resilience to defend against a future pandemic and/or biological threat. While China has been the top research partner of the United States, the actions of the CCP prove that the time has come for the United States to better prioritize safety and national security in its scientific collaborations, including by privileging research with allies and partners who share the values of research integrity and security.<sup>222</sup>

**8. Impose significant costs on China for violating the World Health Organization's International Health Regulations.**<sup>223</sup>

China violated Articles 6 and 7 of the International Health Regulations. Article 6 requires that states first notify the WHO of a public health emergency concern and provide any timely, accurate, and detailed public health information they have available. Article 7 extends this to circumstances that include a state seeing evidence of an unexpected or unusual public health event within its territory that may constitute a public health emergency of international concern, even if the origin or source is unknown. China must be held accountable to 192 other countries for purposely breaching the legally binding agreement it signed. It is impossible to imagine that any global pandemic treaty can succeed if China is allowed to disregard its international commitments and spark a catastrophic global pandemic with impunity.

**9. Consider suspending or revoking the 1979 Science and Technology Agreement (STA) with China.** The STA has been on a temporary month-to-month extension since August 2023.<sup>224</sup> While the STA is a nonbinding cooperative agreement, the landscape has changed completely since the it was last renewed in 2018. Not only does China continue to block any credible investigation into the origin of COVID-19, but a deluge of aggressive new Chinese laws severely restricts the ability of American scientists, academics, and researchers to work collaboratively with Chinese counterparts. China's military-civil fusion policy makes no distinction between the military and civilian use of technology, thereby enabling China to continue international scientific collaboration while concealing that this collaboration also assists in modernizing China's military.<sup>225</sup>

10. **Verify China’s compliance with the Biological Weapons Convention (BWC).** Articles I and III of the Biological Weapons Convention affirm the need to prevent the development, manufacture, or attainment of any biological agent, toxin, weapon, or equipment that has “no justification for prophylactic, protective or other peaceful purposes” and “not to transfer, or in any way assist, encourage or induce anyone to manufacture or otherwise acquire biological weapons.”<sup>226</sup>

While the Biological Weapons Convention entered into force in 1975 and banned an entire class of weapons, it lacks a formal verification protocol and process. In 1987, states that were parties to the convention established an annual data exchange, referred to as the Confidence-Building Measures (CBMs). China became a State Party to the BWC in 1984, and the U.S. State Department has raised questions and concerns about its compliance with the convention since 1993. China has submitted CBMs each year since 1989, including most recently in 2023. Its CBM reporting, however, has never disclosed that China ever possessed an offensive biological weapons program, nor has China acknowledged publicly or in diplomatic channels its past offensive biological weapons efforts. Yet China has reportedly weaponized ricin, botulinum toxins, and the bacterial agents of anthrax, cholera, the plague, and tularemia.<sup>227</sup>

China’s military medical institutions have conducted research to identify, test, and characterize diverse families of potent toxins with dual-use (civilian and military) applications. China’s annual CBMs do not include information on this dual-use biological research on pathogens and marine and animal toxins conducted at military institutions.<sup>228</sup>

## Conclusion

Across the world, the COVID-19 pandemic left 28 million persons dead, whole economies shattered, and the vulnerable impoverished—in addition to creating a mental health crisis. A whole generation’s educational experience was disrupted. In the United States alone, the pandemic killed over a million people and is estimated by our calculations to have cost the country \$18 trillion in losses. Millions of adults and children still suffer from an often-debilitating illness of long COVID.

The scope and scale of this disaster demand answers about the deadly virus’s origin and the circumstances of its spread. It is with that purpose in

mind that the Nonpartisan Commission on China and COVID-19's investigation finds that the balance of evidence shows that the virus resulted from a research-related incident in Wuhan. The report further meticulously documents how China acted in the early weeks and months of the disease's outbreak.

The fact of the matter is that the Chinese government did not act responsibly or transparently. They covered up highly pertinent information about COVID-19—even including when and where the disease began—from their own public, the scientific community, and the world. The Chinese government destroyed evidence, actively gagged their own scientists, jailed journalists for the crime of asking questions, and blocked attempts by the international community to investigate the origins of COVID-19. It engaged in these and other acts despite being a signatory to an international agreement that requires them to notify the World Health Organization of such a public health emergency accurately and in a timely manner.

In the absence of self-accountability by China, and in view of its obstructionist role in international institutions, the Commission believes that only holding the Chinese government accountable and liable for its negligence and malfeasance can provide both China's government and other governments with the incentives and impetus to act differently in the future. It is up to the United States government to implement the recommendations we have proposed. The Commission also hopes that other governments will take inspiration from our work and use it as a model to be adopted within their own contexts. Better to take bold action now than to ask ourselves why we didn't do more if an even deadlier pandemic emerges in the future.

## Commissioners' Biographies

### **John Ratcliffe, Chairman**

John Ratcliffe serves as chairman of the Nonpartisan Commission on China and COVID-19. Previously, as the 6th United States Director of National Intelligence (DNI), Ratcliffe served as the principal intelligence advisor to President Donald J. Trump and as the top official in the U.S. intelligence community. During his tenure, Director Ratcliffe successfully



coordinated and deployed intelligence and military assets to remove numerous designated terrorist leaders from the battlefield, for which he was awarded the National Security Medal, the nation's highest honor for distinguished achievement in the field of intelligence and national security.

Prior to his nomination and confirmation as DNI, John Ratcliffe served for more than five years as the U.S. Representative for the 4th Congressional District of Texas as a member of the House Intelligence, Homeland Security, and Judiciary Committees.

Director Ratcliffe also served in the George W. Bush Administration, initially appointed as Chief of Anti-Terrorism for the Eastern District of Texas, and later was judicially appointed as the U.S. Attorney, the top federal law enforcement official in the district from 2007 to 2008.

From 2008 until 2014, Director Ratcliffe was a founding partner with former U.S. Attorney General John Ashcroft of Ashcroft Sutton Ratcliffe LLP, a firm providing strategic legal advice on national and international security issues. Currently, Director Ratcliffe serves on multiple boards of directors and advisory boards focused on improving the national security posture of the United States.



### **Robert C. O'Brien**

Co-founder and chairman of American Global Strategies LLC, Robert O'Brien was the 27th United States National Security Advisor from 2019–2021. O'Brien served as the President's principal advisor all aspects of American foreign policy and national security affairs and brought a renewed focus on defense and industrial base issues to the NSC. A long-time advocate



of sea power and a 355-ship Navy, O'Brien visited leading shipyards during his tenure. He also spent time at defense plants and with our troops at bases around the world.

During O'Brien's time as National Security Advisor, the United States orchestrated the historic Abraham Accords in the Middle East, brokered economic normalization between Serbia and Kosovo, achieved significant defense spending increases among our NATO allies, and increased cooperation with America's allies across the Indo-Pacific.

Prior to serving as NSA, O'Brien was the Special Presidential Envoy for Hostage Affairs with the personal rank of Ambassador. He was directly involved in the return of over 25 detainees and hostages to the United States. O'Brien previously served as Co-Chairman of the U.S. Department of State Public-Private Partnership for Justice Reform in Afghanistan under Secretaries of State Condoleezza Rice and Hillary Clinton.

O'Brien was also a presidentially appointed member of the U.S. Cultural Property Advisory Committee from 2008–2011. In 2005, he was nominated by President George W. Bush and unanimously confirmed by the U.S. Senate to serve as a U.S. Representative to the 60th session of the U.N. General Assembly. Earlier in his career, O'Brien served as a Senior Legal Officer for the U.N. Security Council commission that decided claims against Iraq arising out of the first Gulf War. He was a major in the Judge Advocate General's Corps of the U.S. Army Reserve.

O'Brien is partner emeritus at Larson LLP in Los Angeles, a nationally recognized litigation boutique that he co-founded in 2016. Over his career, he has served as counsel and arbitrator in dozens of international proceedings.

O'Brien is the recipient of the National Security Medal, the National Intelligence Distinguished Service Medal, the Department of Defense



Medal for Distinguished Public Service, the National Defense Medal, the Legion d'honneur (chevalier), the Republic of China (Taiwan) Order of the Brilliant Star with Special Grand Cordon, and the Kosovo Presidential Medal of Merits.

The National Museum of the Surface Navy named O'Brien the recipient of the 2021 Freedom of the Seas Award. That same year, O'Brien and former Secretary of State Mike Pompeo were awarded the Richard Nixon Foundation's Architect of Peace Award for their work on the Abraham Accords and other initiatives while in office. Following the signing of the Abraham Accords in 2020, a tree was planted on behalf of the State of Israel at the John F. Kennedy Memorial Forest in the Hills of Jerusalem in honor of O'Brien. In 2019, O'Brien received the Dr. Miriam and Sheldon Adelson Award for the Defense of America and Israel. The U.C. Berkeley School of Law presented O'Brien with the Stefan A. Riesenfeld Memorial Award for outstanding contributions to the field of international law in 2011.

In July 2022, O'Brien was elected as Chairman of the Board of Directors of the Richard Nixon Foundation. He also serves as co-chair with Secretary Pompeo of the Nixon Seminar on Conservative Realism and National Security.

O'Brien holds a J.D. from the U.C. Berkeley School of Law. He received his B.A. degree in political science, cum laude, from UCLA.

### **Heidi Heitkamp**

Mary Kathryn "Heidi" Heitkamp is a member of the Nonpartisan Commission on China and COVID-19. She became the Director of the University of Chicago Institute of Politics in January 2023. She was a politician who served as a United States Senator from North Dakota from 2013 to 2019. A member of the North Dakota Democratic-Nonpartisan League

Party, she was the first woman elected to the U.S. Senate from North Dakota. Heitkamp served as the 28th North Dakota attorney general from 1992 to 2000 and 20th North Dakota tax commissioner from 1986 to 1992. As of 2022, she is the last Democrat to have represented North Dakota in Congress and the last to hold statewide office.



After leaving the Senate, Heitkamp became a CNBC contributor and visiting fellow at the Harvard Kennedy School's Institute of Politics. In April 2019, with Senator Joe Donnelly of Indiana (who also lost reelection in 2018), she launched One Country Project, an organization aimed at helping Democrats reconnect with rural voters. Heitkamp earned a B.A. from the University of North Dakota and a J. D. from Lewis Clark Law School.

### **Matthew Pottinger**

Matthew Pottinger is a member of the Nonpartisan Commission on China and COVID-19. He is also a distinguished visiting fellow at the Hoover Institution and chairman of the China Program at the Foundation for Defense of Democracies. Pottinger served as U.S. Deputy National Security Advisor during the Administration of President Donald J. Trump from 2019 to



2021. Prior to that elevation, he served as the National Security Council's Senior Director for Asia, where he led the Administration's work on the Indo-Pacific region and its shift on China policy.

Pottinger is a U.S. Marine veteran who fought in Iraq and Afghanistan between 2007 and 2010. He was a reporter in China for Reuters and *The Wall Street Journal* from 1998 to 2005.

Pottinger is a graduate of the University of Massachusetts at Amherst. He is also co-author and editor of the 2024 book *The Boiling Moat: Urgent Steps to Defend Taiwan*.

### **Jamie Metzl**

Jamie Metzl is a member of the Nonpartisan Commission on China and COVID-19. He is a leading technology and health care futurist, the founder and chair of the global social movement OneShared.World, a senior fellow of the Atlantic Council, a faculty member of NextMed Health, and a Singularity University expert. His public service experience runs the gamut from serving on the U.S. National Security Council and in State Department during the Clinton Administration, with the Senate Foreign Relations Committee on the staff of then-Chairman Joe Biden, and with the United Nations in Cambodia.



Metzl was appointed to the World Health Organization expert advisory committee on human genome editing. He is an accomplished author of various works including, but not limited to, *Superconvergence: How the Genetics, Biotech and AI Revolutions Will Transform Our Lives, Work, and World* and *Hacking Darwin: Genetic Engineering and the Future of Humanity*.

Metzl sits on advisory boards for multiple biotechnology and other companies. He holds a Ph.D. from the University of Oxford, a law degree from Harvard University, and an undergraduate degree from Brown University.

### **John Yoo**

John Yoo is a member of the Nonpartisan Commission on China and COVID-19. He is the Emanuel Heller Professor of Law at the University of California at Berkeley and a distinguished visiting professor at the University of Texas at Austin School of Civic Leadership. He is also a nonresident senior fellow at the American Enterprise Institute.



He was an official in the U.S. Department of Justice, where he worked on national security and terrorism issues after 9/11 and was general counsel for the U.S. Senate Judiciary Committee. He previously clerked for Supreme Court Justice Clarence Thomas and federal appeals Judge Laurence Silberman.

He is the author of *The Politically Incorrect Guide to the Supreme Court* (with Robert Delahunty), *Defender-in-Chief: Trump's Fight for Presidential Power*, and *Point of Attack: Preventive War, International Law, and Global Welfare*. He is also a regular contributor to several news outlets and has published more than 100 articles in academic journals.

Professor Yoo graduated from Yale Law School and summa cum laude from Harvard College.

### Robert Redfield

Dr. Robert Redfield is a renowned virologist who served as Director of the U.S. Centers for Disease Control and Prevention and Administrator of the Agency for Toxic Substances and Disease Registry from 2018 to 2021.

Currently, Dr. Redfield is an adjunct professor at the University of Maryland School of Medicine. He has been a public health leader actively engaged in clinical research and clinical care of chronic human viral infections and infectious diseases, especially HIV, for more than 30 years. He served as founding director of the Department of Retroviral Research within the U.S. Military's HIV Research Program and retired after 20 years of service in the U.S. Army Medical Corps. Following his military service, he co-founded the University of Maryland's Institute of Human Virology with Dr. William Blattner and Dr. Robert C. Gallo and served as Chief of Infectious Diseases and Vice Chair of Medicine at the University of Maryland School of Medicine. Dr. Redfield made several important early contributions to the scientific understanding of HIV, including the demonstration of the importance of heterosexual transmission, the development of the Walter Reed staging system for HIV infection, and the demonstration of active HIV replication in all stages of HIV infection.

In addition to his research work, Dr. Redfield oversaw an extensive clinical program providing HIV care and treatment to more than 5,000 patients



in the Baltimore/Washington, D.C. community. Dr. Redfield served as a member of the President's Advisory Council on HIV/AIDS from 2005 to 2009 and was appointed as chair of the International Subcommittee from 2006 to 2009. He is a past member of the Office of AIDS Research Advisory Council at the National Institutes of Health, the Fogarty International Center Advisory Board at the National Institutes of Health, and the Advisory Anti-Infective Agent Committee of the Food and Drug Administration.

Dr. Redfield earned a bachelor of science degree from Georgetown University's College of Arts and Sciences in 1973. He then attended Georgetown University School of Medicine and was awarded his Doctor of Medicine degree in 1977.

### **Robert Kadlec**

Dr. Robert Kadlec is a member of the Nonpartisan Commission on China and COVID-19. He has devoted his career to biological defense and public health and served as the senior policy advisor for Pandemic Preparedness and Biosecurity to Senator Richard Burr. Dr. Kadlec also served in the Department of Defense and the White House and from 2017 to 2021 in the U.S. Department of Health and Human Services as Assistant Secretary for Preparedness.



Dr. Kadlec holds a bachelor's degree from the U.S. Air Force Academy, a Doctor of Medicine and master's degree in tropical medicine and hygiene from the Uniformed Services University of the Health Sciences, a master's degree in national security studies from Georgetown University, and an honorary Doctor of Science from the University of Nebraska Medical Center.

### David Feith

David Feith is a member of the Nonpartisan Commission on China and COVID-19. He is also an adjunct senior fellow at the Center for a New American Security. Feith served in the U.S. Department of State's East Asia Bureau from 2019 to 2021, including as a U.S. Deputy Assistant Secretary of State for East Asian and Pacific Affairs with oversight of the Offices of Multilateral Affairs and Regional and Security Policy. Feith also served as a member of the Secretary of State's Policy Planning Staff from 2017 to 2019, advising on relations with China and countries across the Indo-Pacific region, for which he received a Superior Honor Award.



Feith previously worked at *The Wall Street Journal*, as an editorial writer based in Hong Kong from 2013 to 2017, and as an op-ed editor in New York from 2010 to 2013. He has also consulted for the U.S. Air Force and published a book entitled *Teaching America: The Case for Civic Education* in 2011. He has testified before the U.S. Senate and the U.S. House of Representatives and has published in *The Washington Post*, *The New York Times*, *Foreign Affairs*, *Commentary*, and other publications. He has a B.A. in history from Columbia University.



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John Ratcliffe  
Chairman  
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# Exhibit 15

SEPTEMBER 21, 2020

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*FINAL REPORT*

# THE ORIGINS OF THE COVID-19 GLOBAL PANDEMIC, INCLUDING THE ROLES OF THE CHINESE COMMUNIST PARTY AND THE WORLD HEALTH ORGANIZATION

HOUSE FOREIGN AFFAIRS COMMITTEE MINORITY STAFF REPORT

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LEAD REPUBLICAN MICHAEL T. McCAUL

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ONE HUNDRED SIXTEENTH CONGRESS





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## EXECUTIVE SUMMARY

During the 2003 SARS pandemic, the Chinese Communist Party (CCP) used its stranglehold on journalists and dissidents in the People's Republic of China (PRC) to hide information and obfuscate the source of the outbreak. CCP leaders failed to inform the World Health Organization (WHO) about the virus for four months. In the wake of this malfeasance, the world demanded reforms to the International Health Regulations (IHR) that govern how countries are required to handle public health emergencies. Today, it has become clear that the CCP failed to heed these lessons. The ongoing pandemic is a tragic second chapter to their mishandling of the 2003 SARS outbreak.

There remain many unanswered questions as to the origins of SARS-CoV-2, the virus that causes COVID-19, and the root of the global pandemic. Nine months into the pandemic, new information continues to emerge from the PRC and elsewhere showing the scale of CCP efforts to cover up the outbreak and punish countries seeking accountability. After discovering new evidence and receiving additional information from the WHO, this report is an effort to put that information into context, define what questions regarding the virus and the response are still outstanding, and provide recommendations on how to improve the global response moving forward. A previous, interim version of this report focused on the early phases of the pandemic, prior to the declaration of a Public Health Emergency of International Concern on January 30, 2020. After the publication of that report, both the WHO and CCP modified their public statements regarding COVID-19, with the WHO issuing a new, "updated" timeline and the CCP temporarily retracting their claim that they notified the WHO on December 31, 2019. This final version extends the timeline through the declaration of a pandemic by the WHO on March 11, 2020 and discusses significant events after that date.

It is beyond doubt that the CCP actively engaged in a cover-up designed to obfuscate data, hide relevant public health information, and suppress doctors and journalists who attempted to warn the world. They deliberately, and repeatedly, disregarded their obligations under the 2005 IHR. Senior CCP leaders, including CCP General Secretary Xi Jinping, knew a pandemic was ongoing weeks before it was announced. By responding in a transparent and responsible manner, the CCP could have supported the global public health response and shared information with the world about how to handle the virus. It is likely the ongoing pandemic could have been prevented had they done so, saving hundreds of thousands of lives and the world from an economic meltdown. As more countries have begun to question the CCP's official accounting of the early stages of the pandemic and call for an international investigation, the PRC has used economic manipulation and trade coercion to demand silence.

WHO Director-General Tedros has responded to the CCP's cover-up by praising the CCP for their "transparency," despite internal documents showing WHO frustration with the CCP's failure to share critical data and information about the virus. The WHO has repeatedly parroted CCP talking points while ignoring conflicting information from reputable sources. Director-General Tedros' full-throated defense of the CCP's early response and embrace of their revisionist history, as well as the impact of his actions on the global response, remains incredibly concerning. There are a multitude of outstanding questions that require a serious examination of

the WHO's handling of COVID-19. However, it remains clear the WHO has failed to fulfill certain duties required by the IHR.

Reflecting on what the Committee Minority has uncovered so far, the failures of the CCP to protect their citizens and fulfill their obligations under international law have resulted in disappeared journalists, a world seized by an ongoing public health emergency, economic calamities, and hundreds of thousands of dead. As such, it is incumbent upon the United States and likeminded WHO Member States to ensure real accountability and necessary reforms in order to prevent the CCP's malfeasance from giving rise to a third pandemic originating from China during this century.

## UPDATE TO THE INTERIM REPORT

The House Foreign Affairs Committee Minority Staff Interim Report on the Origins of the COVID-19 Global Pandemic was published in early June, shortly after the conclusion of the seventy-third meeting of the World Health Assembly. At the time of its release, there were an estimated 7 million cases of COVID-19 around the world, and a death toll of approximately 412,000. Today, the cumulative count stands at more than 30.8 million cases and 958,000 dead.

In the intervening months, and under the direction of Ranking Member McCaul, the House Foreign Affairs Committee Minority staff has continued its investigation into the origins of the virus and the handling of the pandemic by the PRC and the WHO. As the pandemic has unfolded, new information has emerged that sheds additional light on steps taken by the CCP to obfuscate their knowledge of the virus and to directly inhibit the COVID-19 response of other countries. The report's timeline has also been extended through March 11<sup>th</sup>, highlighting key events that occurred prior to Director-General Tedros' delayed pandemic declaration.

During the early stages of the outbreak, PRC companies abroad, at the direction of the CCP, procured millions of protective masks, medical gowns, and gloves on the international market and shipped hundreds of tons of medical equipment from abroad back to the PRC. Within its borders, the CCP nationalized the supply chains and manufacturing capacity of foreign companies like General Motors and 3M to produce medical supplies while denying export licenses for their products. As countries began to call for an international investigation into the PRC's cover-up, the CCP waged a campaign of economic coercion designed to silence their critics.

New primary documents related to the CCP's cover-up have also been identified, including the notice sent by the researcher in Shanghai informing the PRC's National Health Commission that the genome of SARS-CoV-2 had been sequenced. Another key document identified was a discipline notice for a nurse in Taizhou who was punished for discussing the COVID-19 outbreak in her city with classmates and family via WeChat, revealing the widespread nature of the CCP's crackdown on medical professionals. In addition, the 2018 State Department cables regarding the Wuhan Institute of Virology were released and are included in the Appendix.

After multiple letters of inquiry from Ranking Member McCaul, and repeated requests via phone and email by Committee Minority staff, new information has been provided by the WHO related to the declaration of the PHEIC and the WHO-China Joint Mission on Coronavirus Disease 2019. These responses, which provide a level of detail that has not been publicly reported elsewhere, are included in their entirety in the report and Appendix. It remains the Committee Minority's hope that by providing such transparency, a more complete understanding can be developed of the early stages of COVID-19, the CCP's cover-up, and the WHO's mishandling of the pandemic.

## MINORITY STAFF REPORT ON SARS-CoV-2 AND THE COVID-19 GLOBAL PANDEMIC

### I. PREFACE

The world is currently in the grips of a global pandemic known as COVID-19. As of September 20, 2020, there were more than 30.9 million confirmed cases<sup>1</sup> spread across almost every country.<sup>2</sup> More than 958,000 people have reportedly died due to the disease<sup>3</sup>, which is caused by a strain of coronavirus. First identified in 1968, coronaviruses are a family of related RNA viruses known to cause illness in animals and humans.<sup>4</sup> Depending on the strain, coronaviruses can cause a range of illnesses, from mild infections like the common cold to deadly diseases like Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS). The 2019 coronavirus disease (COVID-19) is caused by a strain of coronavirus similar to SARS-CoV, the strain that caused the 2003 SARS pandemic. This virus has been designated SARS-CoV-2.

Based on an examination of the early stages of the outbreak, efforts to conceal the spread and novel nature of the virus, failures to share accurate information as required by international law<sup>5</sup>, and the suppression of voices seeking to warn the world, the Chinese Communist Party (CCP) bears overwhelming responsibility for allowing a local outbreak to become a global pandemic. Senior CCP leaders, including CCP General Secretary Xi Jinping, knew a pandemic was occurring weeks before they warned the public.<sup>6</sup> Research shows that the CCP could have reduced the number of cases in China by up to 95%<sup>7</sup>, had it fulfilled its obligations under international law and implemented a public health response at an earlier date.<sup>8</sup> The World Health Organization (WHO) enabled the CCP cover-up by failing to investigate and publicize reports conflicting with the official CCP narrative, while at the same time praising the CCP's response. **In sum, the COVID-19 global pandemic could have been prevented if the CCP acted in a transparent and responsible manner.**

It is highly relevant to the analysis of these events that at various points, authorities in the People's Republic of China (PRC) have attempted to draw distinctions between various elements of the PRC government, or assigned blame to sub-national authorities. In the PRC, the CCP holds a complete monopoly on power, including the ability of civil authorities to take action or

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<sup>1</sup> "COVID-19 Map." *Johns Hopkins Coronavirus Resource Center*, <https://coronavirus.jhu.edu/map.html>.

<sup>2</sup> The New York Times. "Coronavirus Map: Tracking the Global Outbreak." *The New York Times*, 28 Jan. 2020, [www.nytimes.com/interactive/2020/world/coronavirus-maps.html](http://www.nytimes.com/interactive/2020/world/coronavirus-maps.html).

<sup>3</sup> COVID-19 Map.

<sup>4</sup> Wege, Helmut. "Coronavirus, Infection and Immunity." *Encyclopedia of Immunology*, Elsevier, 1998, 658–661. Crossref, doi:10.1006/rwei.1999.0173.

<sup>5</sup> The World Health Organization, *INTERNATIONAL HEALTH REGULATIONS* (2005), <https://www.who.int/ihr/publications/9789241580496/en/>

<sup>6</sup> "China Didn't Warn Public of Likely Pandemic For 6 Key Days." *AP NEWS*, 15 Jan. 2020, <https://apnews.com/68a9e1b91de4ffc166acd6012d82c2f9>.

<sup>7</sup> Lai, Shengjie, et al. "Effect of Non-Pharmaceutical Interventions for Containing the COVID-19 Outbreak in China." *MedRxiv*, 2020, doi:10.1101/2020.03.03.20029843.

<sup>8</sup> Lai, Shengjie, et al. "Effect of Non-Pharmaceutical Interventions for Containing the COVID-19 Outbreak in China." *MedRxiv*, 2020, doi:10.1101/2020.03.03.20029843.

transmit information. A poignant example of this comes from a statement made by Zhou Xianwang, who served as Mayor of Wuhan when the outbreak started. Zhou defended his role in the cover-up, stating, “As a local government official, I could disclose information only after being authorized.”<sup>9</sup> Thus, findings in this document relating to the responsibilities of the PRC as a state identify the CCP as the entity that bears those responsibilities.

## II. THE EARLY STAGES OF THE PANDEMIC

It is believed that sometime in early to mid-November 2019, a novel coronavirus first infected humans in Wuhan, the capital of Hubei province in the central region of the PRC. While the source of the virus is currently unknown, it is believed to likely be the result of a zoonotic spillover event.<sup>10</sup> According to the Office of the Director of National Intelligence, the intelligence community shares the scientific community’s consensus that the virus is natural and not genetically modified.<sup>11</sup> This virus, later named SARS-CoV-2, causes the illness known as COVID-19 and is the root of the ongoing global pandemic. Currently, the earliest case identified by PRC authorities can be traced back to November 17, 2019.<sup>12</sup> In the following weeks, between one to five new cases were reported daily.<sup>13</sup> On December 16, 2019, a 65-year-old man was admitted to Wuhan Central, a local hospital, with a fever and infections in both lungs. He was treated with both antibiotics and anti-flu medication, but his condition did not improve. It would later be discovered that he worked at the Huanan Seafood Wholesale Market.<sup>14</sup>

According to public reports, in addition to seafood, vendors at the Huanan market sold a variety of wild animals – at one point, approximately 120 live and dead wild animals from 75 species were listed for sale.<sup>15</sup> Among these were civets, camels,<sup>16</sup> and potentially pangolins, all known to be capable of carrying various strains of coronavirus. Throughout late November and early December, hospitals across Wuhan reported dozens of cases of the mystery illness. By December 20<sup>th</sup>, 60 people had contracted the virus, including family members in close contact with Huanan workers, but who did not have direct exposure to the market. This was an early sign of human-to-human transmission. By December 25<sup>th</sup>, medical staff at two different hospitals in

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<sup>9</sup> “China Didn’t Warn Public of Likely Pandemic For 6 Key Days.” *AP NEWS*, 15 Jan. 2020, <https://apnews.com/68a9e1b91de4ffc166acd6012d82c2f9>.

<sup>10</sup> Walsh, Bryan. “The Coronavirus Isn’t the First Pandemic Triggered by Animal Spillover.” *Axios*, 7 May 2020, [www.axios.com/coronavirus-animal-human-health-spillover-bbe5d22e-5146-4858-ac89-39b6ffaeaf6a.html](http://www.axios.com/coronavirus-animal-human-health-spillover-bbe5d22e-5146-4858-ac89-39b6ffaeaf6a.html).

<sup>11</sup> “Intelligence Community Statement on Origins of COVID-19.” Office of the Director of National Intelligence, 30 Apr. 2020, <https://www.dni.gov/index.php/newsroom/press-releases/item/2112-intelligence-community-statement-on-origins-of-covid-19>

<sup>12</sup> Ma, Josephine. “China’s First Confirmed Covid-19 Case Traced Back to November 17.” *South China Morning Post*, 13 Mar. 2020, [www.scmp.com/news/china/society/article/3074991/coronavirus-chinas-first-confirmed-covid-19-case-traced-back](http://www.scmp.com/news/china/society/article/3074991/coronavirus-chinas-first-confirmed-covid-19-case-traced-back).

<sup>13</sup> *Ibid.*

<sup>14</sup> Page, Jeremy, et al. “How It All Started: China’s Early Coronavirus Missteps.” *The Wall Street Journal*, 6 Mar. 2020, [www.wsj.com/articles/how-it-all-started-chinas-early-coronavirus-missteps-11583508932](http://www.wsj.com/articles/how-it-all-started-chinas-early-coronavirus-missteps-11583508932).

<sup>15</sup> Li, Peter J. “First Sars, now the Wuhan coronavirus. Here’s why China should ban its wildlife trade forever.” *South China Morning Post*, 29 Jan. 2020, <https://www.scmp.com/comment/opinion/article/3047828/first-sars-now-wuhan-coronavirus-heres-why-china-should-ban-its>

<sup>16</sup> Perper, Rosie. “China Banned Live Animal Sales in Wuhan, after a Food Market Selling Wolves and Civet Cats Was Linked to a Deadly Virus.” *Business Insider*, 22 Jan. 2020, [www.businessinsider.com/wuhan-virus-china-bans-food-markets-selling-live-animals-wolves-2020-1](http://www.businessinsider.com/wuhan-virus-china-bans-food-markets-selling-live-animals-wolves-2020-1).



Wuhan were quarantined after contracting the virus, a second clear and early sign of human-to-human transmission.<sup>17</sup>

On December 27<sup>th</sup>, hospitals and health officials in Wuhan were notified by a local laboratory processing patient samples that the disease was caused by a new strain of coronavirus that was 87% genetically similar to SARS-CoV, the virus that caused the 2003 SARS pandemic.<sup>18</sup> During that pandemic, the most important method of transmission was human-to-human.<sup>19</sup> When coupled with transmissions among households and amongst healthcare staff, two significant causes of new SARS cases in 2003,<sup>20</sup> Wuhan healthcare workers had reason to be concerned.

Later that day, the Hubei Provincial Hospital of Integrated Chinese and Western Medicine provided this information to the local branch of the Chinese Center for Disease Control and Prevention (China CDC). By this point, at least 180 people were likely carrying the virus.<sup>21</sup> Three days later, Dr. Ai Fen, who ran the emergency department at Wuhan Central, received the results of a laboratory test identifying the cause of the illness as “SARS coronavirus.”<sup>22</sup> Dr. Ai alerted her supervisors and reported the results to the hospital’s Department of Public Health. She then circled the positive result in red and sent the results and a video of lung scans to a classmate from medical school.<sup>23</sup>

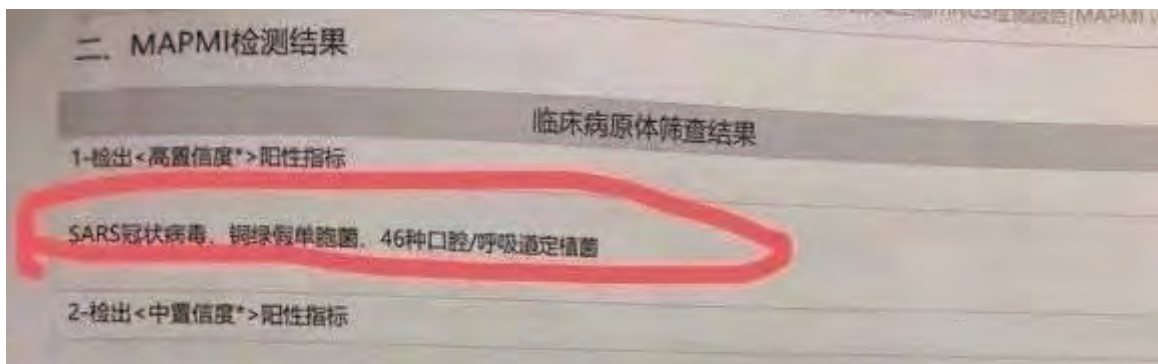


Fig. 1 – Positive Laboratory Test for “SARS Coronavirus”

<sup>17</sup> Page.

<sup>18</sup> Shih, Gerry, et al. “Early Missteps and State Secrecy in China Probably Allowed the Coronavirus to Spread Farther and Faster.” *The Washington Post*, 1 Feb. 2020, [www.washingtonpost.com/world/2020/02/01/early-missteps-state-secrecy-china-likely-allowed-coronavirus-spread-farther-faster/](http://www.washingtonpost.com/world/2020/02/01/early-missteps-state-secrecy-china-likely-allowed-coronavirus-spread-farther-faster/).

<sup>19</sup> Low, Donald E. “Why SARS Will Not Return: a Polemic.” *CMAJ : Canadian Medical Association Journal = Journal De L'Association Medicale Canadienne*, Canadian Medical Association, 6 Jan. 2004, [www.ncbi.nlm.nih.gov/pmc/articles/PMC305318/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC305318/).

<sup>20</sup> *Ibid.*

<sup>21</sup> Ma.

<sup>22</sup> “Whistleblowing Doctor Missing after Criticizing Beijing's Coronavirus Censorship: Reporters without Borders.” *RSF*, 14 Apr. 2020, [www.rsf.org/en/news/whistleblowing-doctor-missing-after-criticizing-beijings-coronavirus-censorship](http://www.rsf.org/en/news/whistleblowing-doctor-missing-after-criticizing-beijings-coronavirus-censorship)

<sup>23</sup> *Ibid.*



The message found its way to Dr. Li Wenliang, another doctor at Wuhan Central, who warned more than 100 of his former classmates via WeChat that “7 cases of SARS have been confirmed”<sup>24</sup>



Fig. 2 – Excerpt from Dr. Li’s message confirming seven cases of SARS

The next day, on December 31<sup>st</sup>, Chinese media reports of an outbreak of atypical pneumonia cases began to appear online. A machine translation of one such report was posted on the website for the Program for Monitoring Emerging Diseases (ProMED), a “U.S.-based open-access platform for early intelligence about infectious disease outbreaks.”<sup>25</sup> According to Dr. Michael Ryan, the Executive Director of the WHO’s Health Emergencies Program, this post on ProMed is how the WHO found out about the outbreak:

On 31st December information on our epidemic intelligence from open-source platform partners, PRO-MED, was received indicating a signal of a cluster of pneumonia cases in China. That was from open sources from Wuhan. On the same day we had a request from health authorities in Taiwan and the message referred to, news sources indicated at least seven atypical pneumonia cases reported in Wuhan media... That request was sent immediately, on the same day, to our country office for follow-up with Chinese authorities and on 1st January we formally requested verification of the event under the [International Health

<sup>24</sup> Lei, Ruipeng, and Renzong Qiu. “Chinese Bioethicists: Silencing Doctor Impeded Early Control of Coronavirus.” *The Hastings Center*, 19 Mar. 2020, [www.thehastingscenter.org/coronavirus-doctor-whistleblower/](http://www.thehastingscenter.org/coronavirus-doctor-whistleblower/).

<sup>25</sup> Lawrence, Susan V. “COVID-19 and China: A Chronology of Events (December 2019-January 2020).” *Congressional Research Service*, The Library of Congress. 13 May 2020.

Regulations], which is a formal process beyond any informal verification which requires a response and requires an interaction from the member state.<sup>26</sup>

WHO headquarters in Geneva instructed the WHO China Country Office to seek verification of these reports from the PRC's government. **Despite public reporting to the contrary, the PRC never notified the WHO about the outbreak in Wuhan.**<sup>27</sup> PRC authorities also actively engaged in a cover-up designed to prevent the spread of information related to patients testing positive for SARS and their knowledge that the illnesses were caused by a coronavirus similar to SARS-CoV. As discussed later in the report, this was in violation of Article 6 of the International Health Regulations.

Instead, the CCP took action to prevent the news from being shared. On December 31<sup>st</sup>, the same day the WHO became aware of media reports about the outbreak, various technology services in China began to censor key words related to the outbreak. On YY, a live-streaming platform, this censorship included the phrases “unknown Wuhan pneumonia” and “Wuhan Seafood Market.” WeChat also censored criticism of the CCP, including “speculative and factual information related to the epidemic, and neutral references to Chinese government efforts to handle the outbreak that had been reported on state media.”<sup>28</sup>

On the same day, in accordance with the 2005 International Health Regulations, an official from the Taiwan Centers for Disease Control (Taiwan CDC) sent an email to the WHO focal point, informing them of online reports from China concerning “at least seven atypical pneumonia cases”<sup>29</sup> in Wuhan. According to the Taiwan CDC, the phrase “atypical pneumonia” is used in China to refer to SARS.<sup>30</sup> In addition, the reference to “at least seven” is strikingly similar to Dr. Li's WeChat message referenced above. Taiwan's email to the WHO also noted that sick patients were being isolated for treatment, a sign of suspected human-to-human transmission. The Taiwan CDC requested the WHO share with them any relevant information. The only response from the WHO was a statement that Taiwan's concerns were forwarded to expert colleagues but would not be posted on their internal website for the benefit of other Member States.<sup>31</sup> Taiwan's government believed the evidence of human-to-human transmission to be so great that on the same day they contacted the WHO, the Taiwanese instituted enhanced

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<sup>26</sup> Remarks by Michael Ryan, Executive Director of the WHO Health Emergencies Programme, at "COVID-19 Virtual Press Conference," April 20, 2020, <https://www.who.int/docs/default-source/coronaviruse/transcripts/who-audio-emergencies-coronavirus-press-conference-20apr2020.pdf>.

<sup>27</sup> *Ibid.*

<sup>28</sup> Ruan, Lotus, et al. “Censored Contagion: How Information on the Coronavirus Is Managed on Chinese Social Media.” *The Citizen Lab*, 4 Mar. 2020, <https://citizenlab.ca/2020/03/censored-contagion-how-information-on-the-coronavirus-is-managed-on-chinese-social-media/>

<sup>29</sup> “The Facts Regarding Taiwan's Email to Alert WHO to Possible Danger of COVID-19.” *Taiwan Centers for Disease Control*, 11 Apr. 2020, [www.cdc.gov.tw/Category/ListContent/sOn2\\_m9QgxKqhZ7omgiz1A?uaid=PAD-lbwDHeN\\_bLa-viBOuw](http://www.cdc.gov.tw/Category/ListContent/sOn2_m9QgxKqhZ7omgiz1A?uaid=PAD-lbwDHeN_bLa-viBOuw).

<sup>30</sup> *Ibid.*

<sup>31</sup> Chen, Frank. “WHO 'Refused to Act' on Taiwan's Virus Alert.” *Asia Times*, 27 Mar. 2020, <https://asiatimes.com/2020/03/who-refused-to-act-on-taiwans-virus-alert/>

border control and quarantine measures “based on the assumption that human-to-human transmission was in fact occurring.”<sup>32</sup>

#### January 2020

The next day, January 1, 2020, CCP officials ordered the Huanan market to be closed and sanitized, destroying forensic evidence that may have provided insight into the origins of the outbreak. An official at the Hubei Provincial Health Commission ordered gene sequencing companies and labs to stop testing and to destroy patient samples. The following day, scientists at the Wuhan Institute of Virology (WIV) completed genetic mapping of SARS-CoV-2 but did not publish the data or inform the WHO.<sup>33</sup> On January 3, the National Health Commission issued a nationwide order similar to the one put in place by the Hubei Provincial Health Commission, requiring that samples of the virus be destroyed. The CCP refused to acknowledge that it issued this order until May 15, 2020.<sup>34</sup>

The WHO did not make public its knowledge of the outbreak in Wuhan until January 4<sup>th</sup>, when it issued two tweets.<sup>35</sup> On the same day, Dr. Ho Pak-leung, the head of the University of Hong Kong’s Centre for Infection, publicly warned that human-to-human transmission was highly likely.<sup>36</sup> The Centre is a designated WHO Collaborating Centre for Infectious Disease Epidemiology and Control.<sup>37</sup> Dr. Ho stated that he believed it was already occurring in Wuhan, due to the rapid increase in reported cases, and warned about a potential surge of cases during the Spring Festival travel season.<sup>38</sup> The Spring Festival travel season lasts forty days; experts predicted approximately 3 billion trips in conjunction with the holiday.<sup>39</sup> On January 5<sup>th</sup>, a second lab in China, at a research institute in Shanghai, informed China’s National Health Commission that it completely mapped the genome of the virus and that it was similar to SARS-CoV.<sup>40</sup>

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<sup>32</sup> *Ibid.*

<sup>33</sup> Allen-Ebrahimian, Bethany. “Timeline: The Early Days of China’s Coronavirus Outbreak and Cover-Up.” *Axios*, 18 Mar. 2020, [www.axios.com/timeline-the-early-days-of-chinas-coronavirus-outbreak-and-cover-up-ee65211a-afb6-4641-97b8-353718a5faab.html](https://www.axios.com/timeline-the-early-days-of-chinas-coronavirus-outbreak-and-cover-up-ee65211a-afb6-4641-97b8-353718a5faab.html).

<sup>34</sup> O’Connor, Tom. “China Acknowledges Destroying Early Coronavirus Samples, Confirming U.S. Accusation.” *Newsweek*, 15 May 2020, [www.newsweek.com/china-acknowledges-destroying-early-coronavirus-samples-confirming-us-accusation-1504484](https://www.newsweek.com/china-acknowledges-destroying-early-coronavirus-samples-confirming-us-accusation-1504484).

<sup>35</sup> World Health Organization. “#China Has Reported to WHO a Cluster of #Pneumonia Cases -with No Deaths- in Wuhan, Hubei Province. Investigations Are Underway to Identify the Cause of This Illness.” *Twitter*, 4 Jan. 2020, [www.twitter.com/WHO/status/1213523866703814656](https://www.twitter.com/WHO/status/1213523866703814656)

<sup>36</sup> Choi, Jimmy. “Wuhan Virus Probably Is Spreading between People’.” *RTHK*, 4 Jan. 2020, <https://news.rthk.hk/rthk/en/component/k2/1500994-20200104.htm>

<sup>37</sup> “WHO Collaborating Centre for Infectious Disease Epidemiology and Control.” *School of Public Health*, <https://sph.hku.hk/en/about-us/divisioncentreunit/who-collaborating-centre-for-infectious-disease-epidemiology-and-control>

<sup>38</sup> Cheung, Elizabeth. “Hong Kong Activates ‘Serious Response Level’ for Infectious Diseases as Wuhan Pneumonia Outbreak Escalates.” *Yahoo! News*, 4 Jan. 2020, <https://sg.news.yahoo.com/hong-kong-activates-serious-response-004758495.html>

<sup>39</sup> Wong, Maggie Hiufu. “3 Billion Journeys: World’s Biggest Human Migration Begins in China.” *CNN*, 10 Jan. 2020, [www.cnn.com/travel/article/chunyun-2020-lunar-new-year-travel-rush-china/index.html](https://www.cnn.com/travel/article/chunyun-2020-lunar-new-year-travel-rush-china/index.html).

<sup>40</sup> Page.

上海市  
复旦大学附属 公共卫生临床中心

关于湖北省武汉市华南海鲜市场不明原因发热肺炎疫情  
的病原学调查报告

国家卫生健康委员会：

我单位（上海市公共卫生临床中心）张永振教授团队与武汉市中心医院、武汉市 CDC 合作，于 2020 年 1 月 5 日从湖北省武汉市华南海鲜市场一名不明原因发热肺炎病人呼吸道灌洗液中检测出类 SARS 冠状病毒，经过高通量测序获得了该病毒的全基因组，序列分析发现该病毒与类 SARS 冠状病毒同源性高达 89.11%，命名为 Wuhan-Hu-1 冠状病毒（WHCV）。由于我们仅有 1 例重症病人的标本，根据我们对该病人及其他病人临床特征等综合分析，造成本次武汉华南海鲜市场不明原因发热肺炎疫情可能是由该新型 Wuhan-Hu-1 冠状病毒引起。鉴于该病毒与造成 SARS 疫情的冠状病毒同源，应是经呼吸道传播，建议在公共场所采取相应的防控措施以及在临床救治中采用抗病毒治疗。

抄送 上海市卫生健康委员会，上海市申康医院发展中心

上海市公共卫生临床中心

2020 年 1 月 5 日

*Fig. 3 – Letter from Shanghai Fudan University Public Health Clinical Center to the National Health Commission*

For a second time, the CCP failed to notify the WHO that Chinese researchers had identified the virus, sequenced its genome, and that it was a coronavirus genetically similar to the virus responsible for the 2003 SARS pandemic.

Beginning January 6<sup>th</sup>, the United States Centers for Disease Control and Prevention (U.S. CDC) repeatedly contacted the PRC, offering to send a team of experts to assist with their response.<sup>41</sup> The CCP refused to allow the teams to enter the PRC. CDC officials would not be allowed to enter the PRC until mid-February, as part of a joint WHO-PRC team. On January 7<sup>th</sup>, CCP General Secretary Xi Jinping reportedly ordered officials to control the outbreak. His personal involvement in this portion of the CCP's response to the virus was not disclosed until

<sup>41</sup> Mcneil, Donald G., and Zolan Kanno-youngs. "C.D.C. and W.H.O. Offers to Help China Have Been Ignored for Weeks." *The New York Times*, 7 Feb. 2020, [www.nytimes.com/2020/02/07/health/cdc-coronavirus-china.html](http://www.nytimes.com/2020/02/07/health/cdc-coronavirus-china.html).



February.<sup>42</sup> The same day General Secretary Xi issued his order, the *Wall Street Journal* reported the outbreak was caused by a novel coronavirus.<sup>43</sup> Two days later, the CCP publicly acknowledged the novel coronavirus as the cause of the outbreak, but claimed “there is no evidence that the new virus is readily spread by humans, which would make it particularly dangerous, and it has not been tied to any deaths.” This announcement was 13 days after Wuhan hospital officials informed CCP health authorities the virus responsible for the outbreak was a coronavirus genetically similar to SARS-CoV, a virus known to be transmittable by humans.

The first death related to the outbreak was reported in Chinese state media on January 11<sup>th</sup>, as travelers from across China began to depart for the annual Spring Festival travel season. The same day, frustrated the CCP had not taken action in response to his January 5<sup>th</sup> warning, Shanghai Public Health Clinical Centre Professor Zhang Yongzhen published his lab’s genomic sequencing data of SARS-CoV-2 on virological.org, an online discussion forum for epidemiology and virus molecular evolution, and GenBank, an open access online database maintained by the National Center for Biotechnology Information within the U.S. National Institutes of Health (NIH). Hours later, the CCP’s National Health Commission announced that it would provide the WHO with the virus’ genomic sequencing. The next day, on January 12<sup>th</sup>, the CCP closed the Shanghai lab for “rectification.”<sup>44</sup> Meanwhile, the Wuhan Institute of Virology (WIV) published online the full genomic sequence of the virus it previously completed ten days prior on January 2<sup>nd</sup> and the CCP provided it to the WHO. It is likely that Professor Zhang’s online publication is what forced the CCP to finally share SARS-CoV-2’s genetic sequencing with the world.

On January 13<sup>th</sup>, one day after the genomic sequence was transmitted to the WHO, the first COVID-19 case outside of the PRC was reported in Thailand.<sup>45</sup> On January 14<sup>th</sup>, the Chief of WHO’s Emerging Disease Unit stated that “it is possible there is limited human-to-human transmission...but it is very clear right now that we have no sustained human-to-human transmissions.”<sup>46</sup> The WHO’s official Twitter account published a tweet the same day stating that “Chinese authorities have found no clear evidence of human-to-human transmission.”<sup>47</sup> This is despite the above-mentioned reports of Chinese healthcare workers contracting the virus from

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<sup>42</sup> Page.

<sup>43</sup> Khan, Natasha. “New Virus Discovered by Chinese Scientists Investigating Pneumonia Outbreak.” *The Wall Street Journal*, 9 Jan. 2020, [www.wsj.com/articles/new-virus-discovered-by-chinese-scientists-investigating-pneumonia-outbreak-11578485668?mod=article\\_inline](http://www.wsj.com/articles/new-virus-discovered-by-chinese-scientists-investigating-pneumonia-outbreak-11578485668?mod=article_inline).

<sup>44</sup> Pinghui, Zhuang. “Lab That First Shared Coronavirus Sequence Closed for 'Rectification'.” *South China Morning Post*, 28 Feb. 2020, [www.scmp.com/news/china/society/article/3052966/chinese-laboratory-first-shared-coronavirus-genome-world-ordered](http://www.scmp.com/news/china/society/article/3052966/chinese-laboratory-first-shared-coronavirus-genome-world-ordered).

<sup>45</sup> Axios.

<sup>46</sup> Nebehay, Stephanie. “WHO Says New China Coronavirus Could Spread, Warns Hospitals Worldwide.” *Reuters*, 14 Jan. 2020, [www.reuters.com/article/us-china-health-pneumonia-who/who-says-new-china-coronavirus-could-spread-warns-hospitals-worldwide-idUSKBN1ZD16J](http://www.reuters.com/article/us-china-health-pneumonia-who/who-says-new-china-coronavirus-could-spread-warns-hospitals-worldwide-idUSKBN1ZD16J).

<sup>47</sup> (WHO), World Health Organization. “Preliminary Investigations Conducted by the Chinese Authorities Have Found No Clear Evidence of Human-to-Human Transmission of the Novel #Coronavirus (2019-NCoV) Identified in #Wuhan, #China. Pic.twitter.com/Fn15P877VG.” *Twitter*, 14 Jan. 2020, [www.twitter.com/WHO/status/1217043229427761152?s=20](https://www.twitter.com/WHO/status/1217043229427761152?s=20)

patients, a warning regarding human-to-human transmission from Taiwan to the WHO, and the public announcement by Dr. Ho at the University of Hong Kong.

On the same day that the WHO downplayed the risk of human-to-human transmission, a teleconference of provincial health officials was convened to convey instructions from several high-ranking CCP officials, including General Secretary Xi, Premier Li Keqiang, and Vice Premier Sun Chunlan. According to internal CCP documents obtained by the *Associated Press*, Ma Xiaowei, the head of China's National Commission of Health, informed the health officials that the situation "changed significantly"<sup>48</sup> with the confirmation of the Thailand case. According to Ma's memo, the CCP believed "the risk of transmission and spread [was] high"<sup>49</sup> due to the upcoming Spring Festival travel season. Ma assessed that "all localities must prepare for and respond to a pandemic."<sup>50</sup> In response, the China CDC in Beijing triggered a significant health response. The National Health Commission sent provincial health officials a 63-page instruction manual on how to respond to the outbreak, including requiring doctors and nurses to wear personal protective equipment. The instructions were marked "internal" and "not to be publicly disclosed."<sup>51</sup> This meeting, and the publication of guidelines by the National Health Commission, is confirmed by the CCP's official timeline of events.<sup>52</sup>

Regardless, on January 17<sup>th</sup> the first new case since January 5<sup>th</sup> was announced, the day after the annual sessions of the Wuhan and Hubei provincial legislative and advisory bodies concluded. It should be noted that these political events began on January 6<sup>th</sup>, likely indicating that announcements of new cases were suspended in order to avoid disrupting a major CCP political meeting.<sup>53</sup> The next day, on January 18<sup>th</sup>, during this undisclosed public health response period, 40,000 families attended potluck banquets across the city of Wuhan.<sup>54</sup>

On January 20<sup>th</sup>, General Secretary Xi finally issued a public statement encouraging a strong response. For the six days prior, the CCP carried out a secretive response that did not inform the Chinese public, the WHO, or the world about the severity of the situation in Wuhan. The January 20<sup>th</sup> statement was also the first time the National Health Commission issued a statement confirming human-to-human transmission of the virus was occurring, despite warnings from local health officials to the CCP a month prior.<sup>55</sup> The next day, the first case of COVID-19 in the United States was confirmed.

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<sup>48</sup> "China Didn't Warn Public of Likely Pandemic For 6 Key Days." *AP NEWS*, 15 Jan. 2020, <https://apnews.com/68a9e1b91de4ffc166acd6012d82c2f9>.

<sup>49</sup> *Ibid.*

<sup>50</sup> *Ibid.*

<sup>51</sup> *Ibid.*

<sup>52</sup> "China Publishes Timeline on COVID-19 Information Sharing, Int'l Cooperation." *Xinhua*, 6 Apr. 2020, [www.xinhuanet.com/english/2020-04/06/c\\_138951662.htm](http://www.xinhuanet.com/english/2020-04/06/c_138951662.htm).

<sup>53</sup> "China Didn't Warn Public of Likely Pandemic For 6 Key Days." *AP NEWS*, 15 Jan. 2020, <https://apnews.com/68a9e1b91de4ffc166acd6012d82c2f9>.

<sup>54</sup> The Star Online. "Wuhan Neighbourhood Sees Infections after 40,000 Families Gather for Potluck." *The Star Online*, 6 Feb. 2020, [www.thestar.com.my/news/regional/2020/02/06/wuhan-neighbourhood-sees-infections-after-40000-families-gather-for-potluck](http://www.thestar.com.my/news/regional/2020/02/06/wuhan-neighbourhood-sees-infections-after-40000-families-gather-for-potluck).

<sup>55</sup> Wang, Yanan. "Human-to-Human Transmission Confirmed in China Coronavirus." *AP NEWS*, 20 Jan. 2020, <https://apnews.com/14d7dcffa205d9022fa9ea593bb2a8c5>

A delegation of WHO experts from its China and Western Pacific regional offices conducted a field mission to Wuhan on January 20<sup>th</sup> and 21<sup>st</sup>.<sup>56</sup> Their January 22<sup>nd</sup> report conceded there was evidence of human-to-human transmission but cautioned that more analysis was needed.<sup>57</sup> That same day, the Director-General of the WHO, Dr. Tedros Adhanom Ghebreyesus, convened the first meeting of the WHO Emergency Committee to discuss the outbreak. After two days of discussion, the Emergency Committee was divided on whether to declare a Public Health Emergency of International Concern (PHEIC).<sup>58</sup> Under Article 49 of the IHR, while the Emergency Committee provides its views to the Director-General, the Director-General alone has the authority to declare a PHEIC.<sup>59</sup> As Director-General, the decision rested with Dr. Tedros. He decided not to declare a PHEIC, stating, “This is an emergency in China, but it has not yet become a global health emergency. At this time, there is no evidence of human-to-human transmission outside China.”<sup>60</sup> Again, this was despite confirmed cases outside of the PRC, cases among healthcare staff within the PRC, and warnings from Taiwan and the University of Hong Kong that human-to-human transmission was occurring.

On the same day Director-General Tedros chose not to declare a PHEIC, the CCP implemented a city wide quarantine in Wuhan, halting all public transportation in and out of the city.<sup>61</sup> However, due to the decision being delayed, an estimated five million people had already left Wuhan in the days and weeks prior.<sup>62</sup> The CCP later suspended group travel abroad but allowed individuals to travel even though, according to the *Nikkei Asian Review*, “groups account for less than half of all Chinese tourists heading abroad.”<sup>63</sup> The announcement came seventeen days<sup>64</sup> after massive outbound traffic for the Spring Festival began.<sup>65</sup> Over the course

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<sup>56</sup> “Mission Summary: WHO Field Visit to Wuhan, China 20-21 January 2020.” *World Health Organization*, [www.who.int/china/news/detail/22-01-2020-field-visit-wuhan-china-jan-2020](http://www.who.int/china/news/detail/22-01-2020-field-visit-wuhan-china-jan-2020).

<sup>57</sup> “Mission Summary: WHO Field Visit to Wuhan, China 20-21 January 2020.” *World Health Organization*, 22 Jan. 2020, [www.who.int/china/news/detail/22-01-2020-field-visit-wuhan-china-jan-2020](http://www.who.int/china/news/detail/22-01-2020-field-visit-wuhan-china-jan-2020).

<sup>58</sup> “Statement on the Meeting of the International Health Regulations (2005) Emergency Committee Regarding the Outbreak of Novel Coronavirus 2019 (n-CoV) on 23 January 2020.” *World Health Organization*, 23 Jan. 2020, [www.who.int/news-room/detail/23-01-2020-statement-on-the-meeting-of-the-international-health-regulations-\(2005\)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-\(2019-ncov\)](http://www.who.int/news-room/detail/23-01-2020-statement-on-the-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-(2019-ncov)).

<sup>59</sup> 2005 IHR.

<sup>60</sup> “WHO Director-General's Statement on the Advice of the IHR Emergency Committee on Novel Coronavirus.” *World Health Organization*, 23 Jan. 2020, [www.who.int/dg/speeches/detail/who-director-general-s-statement-on-the-advice-of-the-ihf-emergency-committee-on-novel-coronavirus](http://www.who.int/dg/speeches/detail/who-director-general-s-statement-on-the-advice-of-the-ihf-emergency-committee-on-novel-coronavirus).

<sup>61</sup> Nakazawa, Katsuji. “China's Inaction for 3 Days in January at Root of Pandemic.” *Nikkei Asian Review*, 18 Mar. 2020, <https://asia.nikkei.com/Editor-s-Picks/China-up-close/China-s-inaction-for-3-days-in-January-at-root-of-pandemic>

<sup>62</sup> “Where Did They Go? Millions Left Wuhan Before Quarantine.” *Voice of America*, 9 Feb. 2020, [www.voanews.com/science-health/coronavirus-outbreak/where-did-they-go-millions-left-wuhan-quarantine](http://www.voanews.com/science-health/coronavirus-outbreak/where-did-they-go-millions-left-wuhan-quarantine).

<sup>63</sup> Nakazawa.

<sup>64</sup> *Ibid*.

<sup>65</sup> “China Focus: China's Mass Transit in High Gear as Spring Festival Travel Rush Starts.” *Xinhua*, 10 Jan. 2020, [www.xinhuanet.com/english/2020-01/10/c\\_138694671.htm](http://www.xinhuanet.com/english/2020-01/10/c_138694671.htm).



of the next several days, France,<sup>66</sup> Australia,<sup>67</sup> and Canada<sup>68</sup> reported their first confirmed cases of COVID-19. On January 28<sup>th</sup>, Director-General Tedros traveled to Beijing as part of a WHO mission. He once again praised the CCP's handling of the outbreak, citing the "transparency they have demonstrated, including sharing data and genetic sequence of the virus."<sup>69</sup> Nowhere in his comments did Director-General Tedros note that this information was only shared after it was leaked online by a Chinese researcher who was then punished as part of the CCP's cover-up.

Two days later, on January 30<sup>th</sup>, Director-General Tedros reconvened the Emergency Committee and, based on their recommendation, declared a PHEIC. According to the WHO, this decision was made "upon receipt of further information from outside China."<sup>70</sup> After repeated requests by the Committee for more specific information, the WHO stated that the confirmation of human-to-human transmission in Vietnam, the first case of such transmission outside of the PRC, was the trigger for the Emergency Committee's recommending the declaration of a PHEIC.<sup>71</sup> By the time the PHEIC was declared, there were nearly 10,000 confirmed COVID-19 cases, including 83 cases in 18 countries outside of the PRC. Three countries had already confirmed human-to-human transmission within their borders.<sup>72</sup> The same day, the first case of human-to-human transmission in the United States was confirmed.<sup>73</sup> Director-General Tedros would not declare COVID-19 a global pandemic until March 11<sup>th</sup>, 41 days later.<sup>74</sup>

#### February and March 2020

In the days after the declaration of the PHEIC, the situation within the PRC continued to deteriorate. On February 1<sup>st</sup>, Wenzhou, a city in the eastern province of Zhejiang was shut down in a manner similar to Wuhan. The nine million inhabitants were restricted to their homes and highways leading to the city were closed.<sup>75</sup> On the same day, the first death outside of China

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<sup>66</sup> "France Confirms First Three Cases of Wuhan Coronavirus in Europe." *France 24*, 24 Jan. 2020, [www.france24.com/en/20200124-france-confirms-first-two-cases-of-wuhan-coronavirus-china-bordeaux-paris](http://www.france24.com/en/20200124-france-confirms-first-two-cases-of-wuhan-coronavirus-china-bordeaux-paris).

<sup>67</sup> "Chief Medical Officer's Update on Novel Coronavirus." *Australian Government Department of Health*, 25 Jan. 2020, [www.health.gov.au/news/chief-medical-officers-update-on-novel-coronavirus-2](http://www.health.gov.au/news/chief-medical-officers-update-on-novel-coronavirus-2).

<sup>68</sup> Vieira, Paul. "Canadian Health Authorities Report 'Presumptive' Case of Coronavirus." *The Wall Street Journal*, 26 Jan. 2020, [www.wsj.com/articles/canadian-health-authorities-report-presumptive-case-of-coronavirus-11579998212](http://www.wsj.com/articles/canadian-health-authorities-report-presumptive-case-of-coronavirus-11579998212).

<sup>69</sup> "WHO, China Leaders Discuss Next Steps in Battle against Coronavirus Outbreak." *World Health Organization*, [www.who.int/news-room/detail/28-01-2020-who-china-leaders-discuss-next-steps-in-battle-against-coronavirus-outbreak](http://www.who.int/news-room/detail/28-01-2020-who-china-leaders-discuss-next-steps-in-battle-against-coronavirus-outbreak).

<sup>70</sup> Tedros, Adhanom Ghebreyesus. Letter to Ranking Member Michael McCaul. 20 July 2020.

<sup>71</sup> Committee staff conversations with WHO. 2 Sept. 2020.

<sup>72</sup> "Statement on the Second Meeting of the International Health Regulations (2005) Emergency Committee Regarding the Outbreak of Novel Coronavirus (2019-nCoV)." *World Health Organization*, 30 Jan. 2020, [www.who.int/news-room/detail/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-\(2005\)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-\(2019-ncov\)](http://www.who.int/news-room/detail/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-(2019-ncov)).

<sup>73</sup> "CDC Confirms Person-to-Person Spread of New Coronavirus in the United States." *Centers for Disease Control and Prevention*, 30 Jan. 2020, [www.cdc.gov/media/releases/2020/p0130-coronavirus-spread.html](http://www.cdc.gov/media/releases/2020/p0130-coronavirus-spread.html).

<sup>74</sup> "WHO Director-General's Opening Remarks at the Media Briefing on COVID-19 - 11 March 2020." *World Health Organization*, 11 Mar. 2020, [www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020](http://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020).

<sup>75</sup> "China Shuts down City of Wenzhou, Far from Virus Epicentre." *The Straits Times*, 4 Feb. 2020, [www.straitstimes.com/asia/east-asia/china-shuts-down-city-of-wenzhou-far-from-virus-epicentre](http://www.straitstimes.com/asia/east-asia/china-shuts-down-city-of-wenzhou-far-from-virus-epicentre).

occurred in the Philippines. The 44-year-old man was a resident of Wuhan and had arrived in the Philippines from the PRC on January 21<sup>st</sup>,<sup>76</sup> two days prior to Wuhan being locked down.

Beginning February 2<sup>nd</sup>, quarantine efforts in Wuhan accelerated as the virus spread. Residents were required to have an official diagnosis to receive treatment, but hospitals were beyond capacity and not testing some patients, even when they presented with symptoms. Ambulances and emergency response personnel were overwhelmed – according to the *New York Times*, local citizens who needed help “called 120, China’s equivalent of the emergency number 911, only to be told that there were already hundreds of people in the queue.”<sup>77</sup> Doctors complained about a “shortage of testing kits and other medical supplies.”<sup>78</sup> A ban on public transportation meant that many residents had to walk to hospitals, sometimes for hours, to receive testing and treatment, when it was available.<sup>79</sup> Wuhan’s healthcare system was failing.

Days earlier, on January 28<sup>th</sup>, the PRC’s National Health Commission announced at a press conference that 10,000 hospital beds would be made available for COVID-19 patients in Wuhan. The announcement stated that more than 5,300 beds had already been designated, with 6,000 additional beds set to become available with the construction of makeshift hospitals.<sup>80</sup> According to the CCP, the official number of cases in Wuhan in early February was around 4,100.<sup>81</sup> The clear disconnect between the number of official cases and the collapse of the local healthcare system suggests a clear underreporting of cases.

On February 7<sup>th</sup>, Dr. Li, who warned his former medical school classmates about the positive SARS tests in Wuhan, died from COVID-19 at Wuhan Central Hospital. As discussed elsewhere in the report, Dr. Li had been threatened with criminal charges for his WeChat messages about the test results and forced to sign a “confession” that recanted his statements as “false.” Initial reports of his death appeared on state media the evening of February 6<sup>th</sup> and led to an outpouring of grief on Chinese social media. This was followed by a statement from Wuhan Central Hospital claiming that Dr. Li was in critical condition, but still alive. Chinese state media reportedly then deleted their tweets announcing his death, which only hours later was confirmed by Wuhan Central as having occurred at 2:58 a.m. local time.<sup>82</sup>

Dr. Li’s death set off a firestorm of criticism on Chinese social media. Within hours of his death, trending topics on Weibo included “Wuhan government owes Dr. Li Wenliang an

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<sup>76</sup> Ramzy, Austin, and Tiffany May. “Philippines Reports First Coronavirus Death Outside China.” *The New York Times*, 2 Feb. 2020, [www.nytimes.com/2020/02/02/world/asia/philippines-coronavirus-china.html](http://www.nytimes.com/2020/02/02/world/asia/philippines-coronavirus-china.html).

<sup>77</sup> Qin, Amy. “Coronavirus Pummels Wuhan, a City Short of Supplies and Overwhelmed.” *The New York Times*, 2 Feb. 2020, [www.nytimes.com/2020/02/02/world/asia/china-coronavirus-wuhan.html](http://www.nytimes.com/2020/02/02/world/asia/china-coronavirus-wuhan.html).

<sup>78</sup> *Ibid.*

<sup>79</sup> *Ibid.*

<sup>80</sup> “Wuhan to Provide over 10,000 Hospital Beds for Viral Pneumonia Patients: Official.” *Xinhua*, 28 Jan. 2020, [www.xinhuanet.com/english/2020-01/28/c\\_138739314.htm](http://www.xinhuanet.com/english/2020-01/28/c_138739314.htm).

<sup>81</sup> Qin.

<sup>82</sup> Xiong, Yong, and Nectar Gan. “Wuhan Hospital Announces Death of Whistleblower Doctor Li Wenliang.” *CNN*, 7 Feb. 2020, [www.cnn.com/2020/02/06/asia/li-wenliang-coronavirus-whistleblower-doctor-dies-intl/index.html](http://www.cnn.com/2020/02/06/asia/li-wenliang-coronavirus-whistleblower-doctor-dies-intl/index.html).

apology,”<sup>83</sup> “We want freedom of speech,”<sup>84</sup> and “I want freedom of speech.”<sup>85</sup> The last topic reportedly drew 1.8 million views by 5 a.m. local time. Comments posted under the statement released by Wuhan Central Hospital revealed the anger, distrust, and frustration of many Chinese citizens. *CNN* reported translations of several such comments:

- “I’ve learned two words: political rescue & performative rescue”
- “Countless young people will mature overnight after today: the world is not as beautiful as we imagined. Are you angry? If any of us here is fortunate enough to speak up for the public in the future, please make sure you remember tonight’s anger.”
- “I knew you would post this in the middle of the night.”
- “You think we’ve all gone to sleep? No. We haven’t.”<sup>86</sup>

The public backlash from Dr. Li’s death was compounded by the rapidly increasing number of COVID-19 related deaths in the PRC. Within 24 hours of Dr. Li’s death, the first American citizen died from COVID-19 in a hospital in Wuhan.<sup>87</sup> The next day, February 9<sup>th</sup>, the death toll from COVID-19 passed that of the SARS pandemic in 2002-2003.<sup>88</sup> As deaths continued to climb, Cui Taikai, the PRC’s Ambassador to the United States, appeared on *Face the Nation*. In an interview with Margaret Brennan, Ambassador Cui sought to distance the PRC government from its harassment of Dr. Li while also justifying the CCP’s behavior:

MARGARET BRENNAN: There has been some outcry on social media, particularly after the death of Dr. Li Wenliang. He had made public warnings for weeks before the government acknowledged this was happening. In fact, authorities had forced him to disavow what he had said previously, which turned out to be true. The Communist Party of China is now investigating this. Why?

AMBASSADOR CUI: Well, we are all very saddened about the death of Dr. Li. He is a good doctor. He was a devoted doctor, and he did his best to protect people’s health. We are so grateful to him. **But you see, he was a doctor and a doctor could be alarmed by some individual cases. But as for the government, you have to do more. You have to base your decisions, your announcement on more solid evidence and signs.** (emphasis added)

MARGARET BRENNAN: But do you think silencing him in the beginning was a mistake?

AMBASSADOR CUI: **I- I don’t know who tried to silence him** (emphasis added), but there was certainly a disagreement or people were not able to reach

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<sup>83</sup> *Ibid.*

<sup>84</sup> *Ibid.*

<sup>85</sup> *Ibid.*

<sup>86</sup> *Ibid.*

<sup>87</sup> Zhong, Raymond, and Edward Wong. “First American Dies of Coronavirus, Raising Questions About U.S. Response.” *The New York Times*, 8 Feb. 2020, [www.nytimes.com/2020/02/08/world/asia/china-coronavirus-american-dead.html](https://www.nytimes.com/2020/02/08/world/asia/china-coronavirus-american-dead.html).

<sup>88</sup> “Deaths in China Surpass Toll From SARS.” *The New York Times*, 9 Feb. 2020, [www.nytimes.com/2020/02/09/world/asia/coronavirus-china.html](https://www.nytimes.com/2020/02/09/world/asia/coronavirus-china.html).

agreement on what exactly the virus is, how it is affecting people. So there was a process of trying to discover more, to learn more about the virus. Maybe some people reacted not quickly enough. Maybe Dr. Li, he perceived some incoming dangers earlier than others, but this is- this could happen anywhere, but whenever we find there's some shortcoming, we'll do our best to correct it.<sup>89</sup>

As this new narrative evolved, CCP officials continued to seek distance between top party officials and the mistakes made in Wuhan. On February 13<sup>th</sup>, the CCP fired the Communist Party secretaries of Hubei province and the city of Wuhan. Government notices indicated that “hundreds of other officials have been penalized and dozens were fired for not properly performing their duties during the outbreak.”<sup>90</sup> These punishments came as officials in Hubei instituted new case definitions for COVID-19, which resulted in a nine fold increase in the number of cases and a doubling of reported deaths. Ying Yong, who had been serving as the mayor of Shanghai, was tapped to replace the Hubei Party secretary.<sup>91</sup> Ying has previously served under Xi and is known as a Xi loyalist.<sup>92</sup> His appointment appeared to reassure some commenters on Chinese social media, with one user calling it a “wise adjustment of the party central committee.”<sup>93</sup>

On February 15<sup>th</sup>, France announced the first confirmed death from COVID-19 outside of Asia, as an 80-year-old Chinese tourist in Paris succumbed to the disease.<sup>94</sup> That same day, the PRC instituted a massive wave of lockdowns and travel restrictions, affecting more than 760 million people across the country. More than half of the PRC’s population was now restricted, in varying degrees, to their homes.<sup>95</sup> Within days, videos began to emerge from the PRC, reportedly showing government officials welding shut the doors of homes and apartment buildings.<sup>96</sup>

As the PRC began this widespread lockdown, Director-General Tedros addressed the Munich Security Conference about COVID-19, warning that the virus had “pandemic potential.”<sup>97</sup> He went on to say “it is impossible to predict which direction this epidemic will take,”<sup>98</sup> but that

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<sup>89</sup> “Transcript: Ambassador Cui Tiankai on ‘Face the Nation,’ February 9, 2020.” *Face the Nation*, CBS News, 9 Feb. 2020, [www.cbsnews.com/news/transcript-cui-tiankai-on-face-the-nation-february-9-2020/](http://www.cbsnews.com/news/transcript-cui-tiankai-on-face-the-nation-february-9-2020/).

<sup>90</sup> Woo, Stu. “China Ousts Senior Officials as Beijing Seeks Distance From Outbreak.” *The Wall Street Journal*, 14 Feb. 2020, [www.wsj.com/articles/china-ousts-top-official-in-coronavirus-outbreaks-epicenter-11581568911](http://www.wsj.com/articles/china-ousts-top-official-in-coronavirus-outbreaks-epicenter-11581568911).

<sup>91</sup> *Ibid.*

<sup>92</sup> “President Xi Jinping’s Pick to Fix Wuhan’s Coronavirus Crisis: The Man Who Lured Tesla to China.” *Fortune*, 14 Feb. 2020, <https://fortune.com/2020/02/14/china-coronavirus-wuhan-hubei-province-ying-yong-tesla/>.

<sup>93</sup> Woo.

<sup>94</sup> Peltier, Elian. “France Confirms First Death in Europe From Coronavirus.” *The New York Times*, 15 Feb. 2020, [www.nytimes.com/2020/02/15/world/europe/france-coronavirus-death.html](http://www.nytimes.com/2020/02/15/world/europe/france-coronavirus-death.html).

<sup>95</sup> Zhong, Raymond, and Paul Mozur. “To Tame Coronavirus, Mao-Style Social Control Blankets China.” *The New York Times*, The New York Times, 15 Feb. 2020, [www.nytimes.com/2020/02/15/business/china-coronavirus-lockdown.html](http://www.nytimes.com/2020/02/15/business/china-coronavirus-lockdown.html).

<sup>96</sup> *Coronavirus: Welding Doors Shut*. CBC/Radio Canada, [www.cbc.ca/player/play/1703503427818](http://www.cbc.ca/player/play/1703503427818).

<sup>97</sup> “Munich Security Conference.” *World Health Organization*, 15 Feb. 2020, [www.who.int/dg/speeches/detail/munich-security-conference](http://www.who.int/dg/speeches/detail/munich-security-conference).

<sup>98</sup> *Ibid.*

steps taken by the PRC have “bought the world time.”<sup>99</sup> Director-General Tedros defended his praise of the PRC, saying:

Much has been written and said about my praise for China. I have given credit where it's due, and I will continue to do that, as I would and I did for any country that fights an outbreak aggressively at its source to protect its own people and the people of the world, even at great cost to itself.<sup>100</sup>

The next day, on February 16<sup>th</sup>, international experts participating in the WHO-China Joint Mission on Coronavirus Disease 2019 arrived in Beijing. The mission, which included 25 experts from the PRC, Germany, Japan, Korea, Nigeria, Singapore, the United States (from the CDC and NIH), and the WHO, continued until February 24<sup>th</sup>.

Several key events occurred while the joint mission was in the PRC. On February 18<sup>th</sup>, Dr. Liu Zhiming, the director of the Wuchang Hospital in Wuhan, died from the virus. At the time, he was the most senior healthcare worker to succumb to the disease. In a dramatic reversal of the CCP's handling of Dr. Li, Dr. Ai, and others, Chinese state media announced that doctors and nurses who die while battling the pandemic will be officially designated as “martyrs.”<sup>101</sup> The next day, the PRC revoked the press credentials and expelled three *Wall Street Journal* reporters in response to an opinion piece published in the paper that was critical of the CCP's handling of the outbreak. According to the *Wall Street Journal*, it was “the first time the Chinese government has expelled multiple journalists simultaneously from one international news organization since the country began re-engaging with the world in the post-Mao era.”<sup>102</sup>

On February 20<sup>th</sup>, Hubei province rolled back the case counting method it instituted on February 13<sup>th</sup>. As a result, it reported just 349 new cases, compared to the almost 1,700 new cases the province reported on February 19<sup>th</sup>.<sup>103</sup> This change came 24 hours after the National Health Commission directed Hubei to only report cases in two categories “suspected cases” and “confirmed cases.”<sup>104</sup> Hubei had been including in its new case counts patients whose diagnosis was confirmed via CT scans or clinical presentation. As mentioned earlier, when Hubei adopted this more accurate reporting scheme, approximately 15,000 new cases were added to its total. After questions were raised about the scientific validity of removing these cases from new reports, Hubei changed its reporting policy yet again on February 21<sup>st</sup>. Ying, Xi's handpicked replacement serving as Hubei's Party secretary, ordered the cases to be added back and,

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<sup>99</sup> *Ibid.*

<sup>100</sup> *Ibid.*

<sup>101</sup> Griffiths, James. “Hospital Director Dies in Wuhan as China Designates Dead Nurses and Doctors as 'Martyrs'.” *CNN*, 18 Feb. 2020, [www.cnn.com/2020/02/17/asia/coronavirus-covid-19-update-intl-hnk/index.html](http://www.cnn.com/2020/02/17/asia/coronavirus-covid-19-update-intl-hnk/index.html).

<sup>102</sup> “China Expels Three Wall Street Journal Reporters.” *The Wall Street Journal*, 19 Feb. 2020, [www.wsj.com/articles/china-expels-three-wall-street-journal-reporters-11582100355](http://www.wsj.com/articles/china-expels-three-wall-street-journal-reporters-11582100355).

<sup>103</sup> “The Chinese Province at the Heart of the Coronavirus Outbreak Changes How It Counts Cases-Again.” *Fortune*, 20 Feb. 2020, <https://fortune.com/2020/02/20/china-coronavirus-count-hubei-province/>.

<sup>104</sup> “《新型冠状病毒肺炎诊疗方案（试行第六版）》解读.” *National Health Commission*, 19 Feb. 2020, [www.nhc.gov.cn/zyygj/s7652m/202002/54e1ad5c2aac45c19eb541799bf637e9.shtml](http://www.nhc.gov.cn/zyygj/s7652m/202002/54e1ad5c2aac45c19eb541799bf637e9.shtml).



according to an official at Hubei's health commission, "said that whoever removed them would be held responsible."<sup>105</sup>

The next day, February 22<sup>nd</sup>, a subgroup of the WHO-China Joint Mission arrived in Wuhan. The report of the mission states the trip to Wuhan was undertaken by "select team members only."<sup>106</sup> Neither the nationality nor the affiliation of those team members is recorded. As part of the investigative process of this report, Ranking Member McCaul sent multiple letters to Director-General Tedros, requesting information on a variety of issues. Included in one such letter was a request for clarification as to who participated in this side trip to Wuhan. Director-General Tedros' response (a copy of which is included in the Appendix) simply repeated the information provided by the Joint Mission in its public report. In addition, House Foreign Affairs Committee Minority staff repeatedly requested this information from the WHO via phone calls and emails, but the WHO was unwilling to divulge which experts participated in the trip to Wuhan.

In conversations with the Committee, the U.S. Department of Health and Human Services (HHS) stated the Wuhan group consisted of three PRC scientists, the WHO delegation lead (a Canadian), the head of the Nigerian CDC, and an infection control expert from Germany. According to HHS, the two Americans, who were willing to travel to Wuhan, were not selected for the trip. They are not aware of how the selections were made.

After this information was provided to the Committee, Committee staff requested confirmation from the WHO. In an email to Committee staff, the WHO provided the following statement:

The WHO Team Leader, Dr. Bruce Aylward, spoke with the international members of the mission to determine and align on the most important issues to assess in Wuhan, within the context of the larger mission and its objectives, and to complement the findings at that point. The team agreed that the two most important issues in terms of the mission's specific objectives in informing the international response were understanding (i) the infection prevention and control (IPC) measures and challenges, given the concerning number of health care worker infections in Wuhan that had been reported during the mission, and (ii) the implementation and management of the massive public health measures that had been put in place – uniquely – in Wuhan and which could have important international implications. In consultation with the entire team, it was agreed that Dr Tim Eckmanns of the Robert Koch Institute, the team's IPC-expert, and Dr Chikwe Ihekweazu, the Director of the Nigeria Centre for Disease Control and the

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<sup>105</sup> "China's Hubei to Add Virus Cases Back to Tally after Methodology Change." *Reuters*, 21 Feb. 2020, [www.reuters.com/article/us-china-health-hubei-toll-idUSKBN20F1FD](http://www.reuters.com/article/us-china-health-hubei-toll-idUSKBN20F1FD).

<sup>106</sup> "Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19)." *World Health Organization*, [www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf?sfvrsn=fce87f4e\\_2#:~:text=The%20Joint%20Mission%20consisted%20of,the%20People's%20Republic%20of%20China](http://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf?sfvrsn=fce87f4e_2#:~:text=The%20Joint%20Mission%20consisted%20of,the%20People's%20Republic%20of%20China).

team's expert on large scale emergency management, had the most appropriate skill sets for this mission.

There is clear conflict between HHS' position that they are not aware as to how the selections for the Wuhan group were made, and the WHO's statement that the entire team was consulted in the decision-making process.

On February 24<sup>th</sup>, the Standing Committee of the National People's Congress announced that its annual session, the most important political event of the year, would be delayed due to the COVID-19 pandemic.<sup>107</sup> That same day, officials in Wuhan announced that visitors to the city who were currently stuck in Wuhan due to the lockdown and who did not have symptoms of the virus would be able to leave. This announcement was reversed only three hours later. The mayor of Wuhan, Zhou Xianwang, said that the order was made without authorization and that the responsible officials had been punished.<sup>108</sup>

The next day was an important turning point for the pandemic. February 25<sup>th</sup> was the first day during which more new cases were reported from outside of the PRC than within.<sup>109</sup> 24 hours later, the WHO-China Joint Mission held a press conference to announce their findings. According to Director-General Tedros, the mission found that the outbreak in the PRC "peaked and plateaued between the 23<sup>rd</sup> of January and the 2<sup>nd</sup> of February, and has been declining steadily."<sup>110</sup> As the WHO praised the PRC's handling of the outbreak, February came to an end. In the United States, the first death occurred within its borders.<sup>111</sup>

On March 1<sup>st</sup>, the global death toll from the COVID-19 pandemic passed 3,000.<sup>112</sup> A second person died from COVID-19 in the United States. In the days that followed, the number of cases worldwide topped 100,000 as the pandemic continued to spread.<sup>113</sup> On March 10<sup>th</sup>, as the WHO announced that 70% of reported cases in the PRC had recovered,<sup>114</sup> Italy declared a nation-wide

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<sup>107</sup> "China's Top Legislature Postpones Annual Session." *Xinhua*, 24 Feb. 2020, [www.xinhuanet.com/english/2020-02/24/c\\_138814164.htm](http://www.xinhuanet.com/english/2020-02/24/c_138814164.htm).

<sup>108</sup> "Confusion in Wuhan as Move to Ease Coronavirus Lockdown Is Reversed." *South China Morning Post*, 24 Feb. 2020, [www.scmp.com/news/china/society/article/3052142/confusion-wuhan-move-ease-coronavirus-lockdown-reversed](http://www.scmp.com/news/china/society/article/3052142/confusion-wuhan-move-ease-coronavirus-lockdown-reversed).

<sup>109</sup> "Coronavirus Disease 2019 (COVID-19) Situation Report – 37." *World Health Organization*, 26 Feb. 2020, [www.who.int/docs/default-source/coronaviruse/situation-reports/20200226-sitrep-37-covid-19.pdf?sfvrsn=2146841e\\_2](http://www.who.int/docs/default-source/coronaviruse/situation-reports/20200226-sitrep-37-covid-19.pdf?sfvrsn=2146841e_2).

<sup>110</sup> "WHO Director-General's Opening Remarks at the Mission Briefing on COVID-19 - 26 February 2020." *World Health Organization*, 25 Feb. 2020, [www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-mission-briefing-on-covid-19---26-february-2020](http://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-mission-briefing-on-covid-19---26-february-2020).

<sup>111</sup> Mettler, Katie, and William Wan. "First Coronavirus Death in U.S. and New Cases Detected as Testing Expands." *The Washington Post*, 1 Mar. 2020, [www.washingtonpost.com/health/first-us-coronavirus-death-prompts-new-travel-restrictions-from-trump/2020/02/29/4d492a7c-5b2b-11ea-9b35-def5a027d470\\_story.html](https://www.washingtonpost.com/health/first-us-coronavirus-death-prompts-new-travel-restrictions-from-trump/2020/02/29/4d492a7c-5b2b-11ea-9b35-def5a027d470_story.html).

<sup>112</sup> Renton, Adam, and Mike Hayes. "The Coronavirus Has Killed over 3,000 People across the Globe." *CNN*, 3 Mar. 2020, [www.cnn.com/asia/live-news/coronavirus-outbreak-03-02-20-intl-hnk/h\\_0b9ad2a9445609ceb3466b0c5edc5162](http://www.cnn.com/asia/live-news/coronavirus-outbreak-03-02-20-intl-hnk/h_0b9ad2a9445609ceb3466b0c5edc5162).

<sup>113</sup> "UPDATED: Timeline of the Coronavirus: Think Global Health." *Council on Foreign Relations*, [www.thinkglobalhealth.org/article/updated-timeline-coronavirus](http://www.thinkglobalhealth.org/article/updated-timeline-coronavirus).

<sup>114</sup> "The Latest: 70 Pct of COVID-19 Infections in China Has Recovered: WHO." *Xinhua*, 10 Mar. 2020, [www.xinhuanet.com/english/2020-03/10/c\\_138860245.htm](http://www.xinhuanet.com/english/2020-03/10/c_138860245.htm).



lockdown.<sup>115</sup> Cases were reported in all 27 member countries of the European Union.<sup>116</sup> The next day, the United Nations announced that approximately 20% of students around the world were out of school due to COVID-19.<sup>117</sup>

On March 11<sup>th</sup>, after more than 4,000 deaths and with more than 118,000 cases across 114 countries, Director-General Tedros finally declared COVID-19 a global pandemic. It appears from his comments that Director-General Tedros was nervous about the declaration. Throughout his speech, he highlighted the severity of the declaration of a pandemic while undermining the importance of the announcement:

“Pandemic is not a word to use lightly or carelessly. It is a word that, if misused, can cause unreasonable fear, or unjustified acceptance that the fight is over, leading to unnecessary suffering and death.”<sup>118</sup>

Director-General Tedros also defended the WHO’s handling of the virus:

“WHO has been in full response mode since we were notified of the first cases. And we have called every day for countries to take urgent and aggressive action. We have rung the alarm bell loud and clear.”<sup>119</sup>

As can be seen from the facts above, his comments strain credulity and unfortunately, by this point, the damage was done. The world was in the grips of a global pandemic, one that had been exacerbated by the Chinese Communist Party’s cover-up of the early stages of the virus and the WHO’s mishandling of the outbreak.

### III. THE CHINESE COMMUNIST PARTY’S COVER-UP

From the early stages of the pandemic, the CCP repeatedly acted to conceal vital information about the virus from their own people, the WHO, and the world. The timeline above notes several examples:

- The failure of the CCP to notify the WHO about the outbreak of a novel disease within their borders.
- The repeated failure of the CCP to notify the WHO of cases meeting the WHO definition of SARS.

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<sup>115</sup> “Coronavirus: Italy Extends Emergency Measures Nationwide.” *BBC News*, 10 Mar. 2020, [www.bbc.com/news/world-europe-51810673](http://www.bbc.com/news/world-europe-51810673).

<sup>116</sup> “UPDATED: Timeline of the Coronavirus: Think Global Health.” *Council on Foreign Relations*, [www.thinkglobalhealth.org/article/updated-timeline-coronavirus](http://www.thinkglobalhealth.org/article/updated-timeline-coronavirus).

<sup>117</sup> Renton, Adam. “20% Of Students across the World Are out of School Because of Coronavirus.” *CNN*, 12 Mar. 2020, [www.cnn.com/world/live-news/coronavirus-outbreak-03-11-20-intl-hnk/h\\_18f6187342b1eb508dac90cb22375f81](http://www.cnn.com/world/live-news/coronavirus-outbreak-03-11-20-intl-hnk/h_18f6187342b1eb508dac90cb22375f81).

<sup>118</sup> “WHO Director-General's Opening Remarks at the Media Briefing on COVID-19 - 11 March 2020.” *World Health Organization*, 11 Mar. 2020, [www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020](http://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020).

<sup>119</sup> *Ibid.*

- The decision not to immediately publish the WIV's completed genetic mapping of SARS-CoV-2, the virus that causes COVID-19, which would have shown its similarity to SARS-CoV and confirmed it to be a novel coronavirus.
- The shuttering of the Shanghai lab that published the SARS-CoV-2 genome online.
- The lack of new case announcements during CCP political meetings between January 6<sup>th</sup> and January 17<sup>th</sup>.
- The suppression of reports from medical doctors within the PRC providing evidence of human-to-human transmission.
- The six days of undisclosed response during January, during which General Secretary Xi and other senior CCP officials kept secret their knowledge that human-to-human transmission was occurring and that a pandemic was likely.

In addition to what has already been covered in this report, there are a multitude of other examples of the CCP's efforts to obfuscate, hide, and suppress information. Despite repeated requests, the CCP has refused to share PRC virus samples with the international community. Of note, on January 24<sup>th</sup>, CCP officials in Beijing prevented the WIV from sharing virus samples with a biosafety lab at the University of Texas medical branch in Galveston after the WIV had already agreed to share the samples.<sup>120</sup>

CCP propagandists have also sought to sow disinformation and shift the blame away from their cover-up. As countries began to restrict travel, the CCP publicly and privately criticized them. In mid-February, the CCP revoked press credentials from Western news outlets that were actively covering the outbreak.<sup>121</sup> On at least two occasions, CCP officials sent requests to State Senator Roger Roth, the president of the Wisconsin Senate, asking that the Senate pass a resolution praising the PRC's response to the pandemic.<sup>122</sup> Germany has reported that similar requests were made within their borders by Chinese diplomats.<sup>123</sup>

In other countries, the CCP has preemptively threatened countries who were critical of the PRC's handling of the early stages of the outbreak. According to the *New York Times*, a report initially prepared by officials in the European Union was censored, and then rewritten, at the demand of the CCP. The draft report criticized the CCP for, among other things, spreading disinformation related to the origins of SARS-CoV-2 and publishing false accusations on the website of the PRC Embassy in Paris accusing French politicians of using racist slurs to describe Director-General Tedros.<sup>124</sup> The draft publication reportedly included the following:

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<sup>120</sup> Abutaleb, Yasmeen, et al. "The U.S. Was Beset by Denial and Dysfunction as the Coronavirus Raged." *The Washington Post*, 4 Apr. 2020, [www.washingtonpost.com/national-security/2020/04/04/coronavirus-government-dysfunction/?arc404=true](https://www.washingtonpost.com/national-security/2020/04/04/coronavirus-government-dysfunction/?arc404=true).

<sup>121</sup> "China Expels Three Wall Street Journal Reporters." *The Wall Street Journal*, 19 Feb. 2020, [www.wsj.com/articles/china-expels-three-wall-street-journal-reporters-11582100355](https://www.wsj.com/articles/china-expels-three-wall-street-journal-reporters-11582100355)

<sup>122</sup> Wong, Edward, and Paul Mozur. "China's 'Donation Diplomacy' Raises Tensions with U.S." *The New York Times*, 14 Apr. 2020, [www.nytimes.com/2020/04/14/us/politics/coronavirus-china-trump-donation.html](https://www.nytimes.com/2020/04/14/us/politics/coronavirus-china-trump-donation.html).

<sup>123</sup> "Germany Says China Sought to Encourage Positive COVID-19 Comments." *The New York Times*, 27 Apr. 2020, [www.nytimes.com/reuters/2020/04/27/world/europe/27reuters-health-coronavirus-germany-china.html](https://www.nytimes.com/reuters/2020/04/27/world/europe/27reuters-health-coronavirus-germany-china.html).

<sup>124</sup> Apuzzo, Matt. "Pressured by China, E.U. Softens Report on Covid-19 Disinformation." *The New York Times*, 24 Apr. 2020, [www.nytimes.com/2020/04/24/world/europe/disinformation-china-eu-coronavirus.html](https://www.nytimes.com/2020/04/24/world/europe/disinformation-china-eu-coronavirus.html).

China has continued to run a global disinformation campaign to deflect blame for the outbreak of the pandemic and improve its international image. Both overt and covert tactics have been observed.<sup>125</sup>

The CCP intervened to prevent its release. One European Union diplomat, Lutz Güllner, informed his colleagues via email that “The Chinese are already threatening with reactions if the report comes out.”<sup>126</sup> As a result, the above reference to global disinformation was removed, as was the criticism for the disparaging false article regarding French parliamentarians. One analyst reportedly described the changes as “self-censoring to appease the Chinese Communist Party.”<sup>127</sup>

CCP officials in the PRC’s Foreign Ministry have also made unsubstantiated claims that the virus may have originated outside of the PRC.<sup>128</sup> Lijian Zhao, an official within the ministry, shared an article on Twitter that claimed that the virus was brought to the PRC by the U.S. military.<sup>129</sup> The article was from [globalresearch.ca](http://globalresearch.ca), a website that pushes pro-Putin propaganda and has reported ties to Russian state media.<sup>130</sup> His tweet was amplified by the Chinese Embassy in South Africa.<sup>131</sup>



Fig. 4 –Zhao Lijian tweet from March 12, 2020

<sup>125</sup> *Ibid.*

<sup>126</sup> *Ibid.*

<sup>127</sup> *Ibid.*

<sup>128</sup> “Foreign Ministry Spokesperson Zhao Lijian's Regular Press Conference on March 4, 2020.” *Ministry of Foreign Affairs of the People's Republic of China*, 4 Mar. 2020, [www.fmprc.gov.cn/mfa\\_eng/xwfw\\_665399/s2510\\_665401/2511\\_665403/t1752172.shtml](http://www.fmprc.gov.cn/mfa_eng/xwfw_665399/s2510_665401/2511_665403/t1752172.shtml).

<sup>129</sup> Zhao, Lijian. “This Article Is Very Much Important to Each and Every One of Us. Please Read and Retweet It. COVID-19: Further Evidence That the Virus Originated in the US.” *Twitter*, 13 Mar. 2020, [www.twitter.com/zlj517/status/1238269193427906560](https://www.twitter.com/zlj517/status/1238269193427906560)

<sup>130</sup> Thomas, Elise, and Aspi. “Chinese Diplomats and Western Fringe Media Outlets Push the Same Coronavirus Conspiracies.” *The Strategist*, 30 Mar. 2020, [www.aspistrategist.org.au/chinese-diplomats-and-western-fringe-media-outlets-push-the-same-coronavirus-conspiracies/](http://www.aspistrategist.org.au/chinese-diplomats-and-western-fringe-media-outlets-push-the-same-coronavirus-conspiracies/).

<sup>131</sup> Chinese Embassy in South Africa. “More Evidence Suggests That the Virus Was Not Originated at the Seafood Market in Wuhan at All, Not to Mention the so Called ‘Made in China’.” *Twitter*, 16 Mar. 2020, [www.twitter.com/ChineseEmbSA/status/1239453193689587712](https://www.twitter.com/ChineseEmbSA/status/1239453193689587712)

This conspiracy theory was also pushed by the Arabic language site of PRC state media company CGTN, who published an Arabic-language article also claiming COVID-19 originated in the United States.<sup>132</sup> In late March, CCP state media shifted their story again, publicizing a narrative that implied the virus originated in Italy.<sup>133</sup>

Perhaps most critically, the CCP manipulated case statistics throughout the outbreak in an effort to minimize the significance of the spread of SARS-CoV-2 and the corresponding number of cases of COVID-19. From the beginning, the CCP only allowed some symptomatic cases to be reported. Prior to mid-February, the CCP only reported cases that were symptomatic, clinically diagnosed, and confirmed by laboratory tests. On February 13<sup>th</sup>, this standard was relaxed in Hubei province for those unable to get a test or still waiting on results. After this change in policy, the CCP reported 14,840 new cases in one day.<sup>134</sup> On March 22<sup>nd</sup>, reports emerged that classified CCP data showed that by the end of February some 43,000 asymptomatic people in China had tested positive for the virus, representing one-third of all cases.<sup>135</sup> It was not until March 31<sup>st</sup>, after reports surfaced that CCP guidelines prevented asymptomatic cases from being included in the number of confirmed cases, that this policy was reversed.<sup>136</sup>

In late March, Wuhan residents told *Radio Free Asia* the CCP's official death toll of 2,500 was impossibly low. The reporting indicated the Hankou Funeral Home received a shipment of 5,000 new urns from a supplier in a single day. Seven large funeral homes in Wuhan were reportedly returning the cremated remains of approximately 500 people to their families each day. According to one Wuhan resident, many believed the actual death toll was in excess of 40,000 by the end of March.<sup>137</sup>

#### Harassment of Healthcare Professionals and Disappearances of Journalists

The CCP's cover-up was not limited to the suppression of data or case numbers but involved gross violations of human rights as well. Three citizen journalists were disappeared after publishing videos taken in Wuhan of hospitals and crematoriums. One, Li Zehua, resurfaced on April 23<sup>rd</sup>. In a video posted online, Li said that he was removed from his apartment on February 26<sup>th</sup> by CCP security agents, who detained him for 24 hours for "disrupting public order" before forcibly quarantining him in a hotel until March 14<sup>th</sup>. He was then returned to Wuhan and forced

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<sup>132</sup> "Six Questions for the United States: Where Did the New Coronavirus Come from?" *Arabic CGTN*, 24 Mar. 2020, <https://arabic.cgtn.com/n/BfJAA-cA-GAA/DFfBIA/index.html>

<sup>133</sup> Gitter, David, et al. "China Will Do Anything to Deflect Coronavirus Blame." *Foreign Policy*, 30 Mar. 2020, [www.foreignpolicy.com/2020/03/30/beijing-coronavirus-response-see-what-sticks-propaganda-blame-ccp-xi-jinping/](http://www.foreignpolicy.com/2020/03/30/beijing-coronavirus-response-see-what-sticks-propaganda-blame-ccp-xi-jinping/)

<sup>134</sup> Feng, Emily, and Scott Neuman. "A Change in How 1 Chinese Province Reports Coronavirus Adds Thousands of Cases." *NPR*, 13 Feb. 2020, [www.npr.org/sections/goatsandsoda/2020/02/13/805519117/a-change-in-how-one-chinese-province-reports-coronavirus-adds-thousands-of-cases?utm\\_medium=RSS&utm\\_campaign=globalhealth](http://www.npr.org/sections/goatsandsoda/2020/02/13/805519117/a-change-in-how-one-chinese-province-reports-coronavirus-adds-thousands-of-cases?utm_medium=RSS&utm_campaign=globalhealth)

<sup>135</sup> Ma, Josephine, et al. "A Third of Virus Cases May Be 'Silent Carriers', Classified Data Suggests." *South China Morning Post*, 23 Mar. 2020, [www.scmp.com/news/china/society/article/3076323/third-coronavirus-cases-may-be-silent-carriers-classified](http://www.scmp.com/news/china/society/article/3076323/third-coronavirus-cases-may-be-silent-carriers-classified).

<sup>136</sup> Renton, Adam, and Mike Hayes. "March 31 Coronavirus News." *CNN*, 1 Apr. 2020, [www.cnn.com/world/live-news/coronavirus-pandemic-03-31-20/index.html](http://www.cnn.com/world/live-news/coronavirus-pandemic-03-31-20/index.html).

<sup>137</sup> "Estimates Show Wuhan Death Toll Far Higher Than Official Figure." *Radio Free Asia*, 1 Apr. 2020, [www.rfa.org/english/news/china/wuhan-deaths-03272020182846.html](http://www.rfa.org/english/news/china/wuhan-deaths-03272020182846.html).

to quarantine for another 14 days.<sup>138</sup> According to the Committee to Protect Journalists, Li originally traveled to Wuhan to investigate the disappearance of another journalist, Chen Quishi, who the CCP had previously disappeared. Neither Chen Quishi nor Fang Bin, another journalist who was disappeared, have resurfaced.

Additionally, there are multiple, disturbing examples of the CCP harassing and detaining Chinese doctors who attempted to warn others about the realities of the outbreak. Dr. Li, the doctor noted above who revealed on WeChat there were seven confirmed cases of SARS connected to the Huanan market, was reprimanded by hospital officials. On January 3<sup>rd</sup>, four days after he warned his fellow doctors, Dr. Li was forced by the Wuhan Public Security Bureau to sign a letter that accused him of “making false comments” that “severely disturbed the social order.”<sup>139</sup> He was also threatened with criminal prosecution. Dr. Li was one of at least eight doctors in Wuhan harassed by the police for publicly discussing the outbreak.<sup>140</sup> Their punishment was broadcast on national television, intimidating other doctors and discouraging them from speaking up.<sup>141</sup> After Dr. Li signed the letter he returned to work, where he contracted the virus five days later. After being admitted to the emergency department of the same hospital in which he worked, Dr. Li died on February 7<sup>th</sup>.<sup>142</sup>

Dr. Li and the other seven doctors were not the only medical professionals that were harassed by CCP officials. Dr. Ai, who shared the laboratory test confirming SARS with Dr. Li, ordered her staff to begin wearing masks on January 1<sup>st</sup> after a healthcare worker arrived in her Emergency Department from another hospital. The patient, an owner of a private clinic, became ill after treating patients with a fever. That evening, Dr. Ai was ordered to appear before the hospital’s discipline board the next day, where she was blamed for “spreading rumors.”<sup>143</sup> Despite efforts to defend herself and explain her concerns regarding human-to-human transmission, the board accused her of causing panic and said she “damaged the stability” of Wuhan.<sup>144</sup> On January 11<sup>th</sup>, it was confirmed that one of Dr. Ai’s nurses had contracted the virus. After calling an emergency meeting of the hospital, her superiors directed the nurse’s medical chart to be altered to reflect a less serious diagnosis. Five days later, hospital officials reiterated their denial that human-to-human transmission of the virus was occurring.<sup>145</sup> On March 10<sup>th</sup>, the Chinese magazine *Renwu* published an interview with Dr. Ai on her first-hand account of her treatment and the CCP’s suppression of information regarding the outbreak. Within three hours, the original report was removed by CCP censors.

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<sup>138</sup> “Chinese Citizen Journalist Resurfaces After Going Missing in Wuhan.” *The New York Times*, 23 Apr. 2020, [www.nytimes.com/reuters/2020/04/23/world/asia/23reuters-health-coronavirus-china-journalist.html](http://www.nytimes.com/reuters/2020/04/23/world/asia/23reuters-health-coronavirus-china-journalist.html).

<sup>139</sup> “Li Wenliang: Coronavirus Kills Chinese Whistleblower Doctor.” *BBC News*, 7 Feb. 2020, [www.bbc.com/news/world-asia-china-51403795](http://www.bbc.com/news/world-asia-china-51403795).

<sup>140</sup> “China Exonerates Doctor Reprimanded for Warning of Virus.” *POLITICO*, 20 Mar. 2020, [www.politico.com/news/2020/03/20/china-exonerates-doctor-reprimanded-for-warning-of-virus-138637](http://www.politico.com/news/2020/03/20/china-exonerates-doctor-reprimanded-for-warning-of-virus-138637).

<sup>141</sup> “China Didn’t Warn Public of Likely Pandemic For 6 Key Days.” *AP NEWS*, 15 Jan. 2020, <https://apnews.com/68a9e1b91de4ffc166acd6012d82c2f9>.

<sup>142</sup> *BBC News*.

<sup>143</sup> Page.

<sup>144</sup> *Ibid*.

<sup>145</sup> Gong, Jingqi. “Whistleblower.” *Renwu*, 10 Mar. 2020. Retrieved: <http://archive.is/OLdHs>



Healthcare professionals in Wuhan were not the only ones subject to such treatment. On January 26<sup>th</sup>, the CCP's Discipline Inspection Commission for Taizhou City Number Two People's Hospital issued a notice regarding Li Min, a nurse at the hospital. Li was punished for discussing the COVID-19 outbreak with her classmates via WeChat and reprimanded for lacking the proper "discipline." The notice, which includes a broader warning to the entire hospital, is clearly intended to suppress discussion of the outbreak on social media platforms, including with groups of family and friends. It is important to note that the notice is dated two days prior to Director-General Tedros' arrival in Beijing to discuss COVID-19 with General Secretary Xi.

## 泰州市第二人民医院

### 关于急诊科护士李敏违反新型冠状病毒感染的肺炎疫情防控工作纪律处理意见的通报

各部门、各科室：

当前，正值新型冠状病毒感染的肺炎疫情防控的关键时期，全院广大干部职工在各级政府及卫生行政主管部门的坚强领导下，团结一心，抗击疫情，但仍有个别人员纪律意识不强。2020年1月26日，急诊科护士李敏，无视疫情防控工作纪律，与同学微信聊天时擅自谈论疫情防控相关信息，聊天记录被其同学发至微信群，造成不良影响。根据泰州二院《关于强化新型冠状病毒感染的肺炎疫情防控工作监督执纪问责的通知》规定，决定给予李敏全院通报批评处理，后续处理意见待进一步研究确定。请各科室引以为戒，切实加强医务人员纪律教育，任何人不得擅自接受媒体采访或发布疫情防控相关信息，不得在家族群、同学群等微信群发布相关敏感信息。



*Fig. 5 – Discipline Notice from the CCP's Discipline Inspection Commission for Taizhou City Number Two People's Hospital*

While anecdotal, this example raises the question of how many other healthcare professionals were punished or silenced by the CCP? Open conversation between healthcare providers helps inform patient treatment and allows the sharing of best practices. The CCP's efforts to silence healthcare providers through fear is a disturbing example of the party's effort to control information and cover up their mishandling of the pandemic.

#### Failure to Adhere to the International Health Regulations

During late 2002 and early 2003, the PRC failed to report the outbreak of a new and deadly disease within their borders. After four months, they notified the WHO that they had an ongoing SARS outbreak. CCP efforts to cover up the source of the outbreak and their refusal to share information was identified as a key factor in the outbreak growing to the scale it did.<sup>146</sup> All told, SARS spread to 28 countries outside of the PRC, resulting in more than 8,000 cases and 774 known deaths.<sup>147</sup>

As a result, in 2005, the WHO Member States agreed to update the International Health Regulations (IHR). The IHR is a legally binding instrument that obligates all Member States of the WHO to carry out certain public health functions. Article 6 requires Member States to inform the WHO of all events occurring within their borders that may constitute a Public Health Emergency of International Concern (PHEIC). Annex 2 of the IHR is a “decision instrument” that provides countries a framework to determine if an event needs to be reported. According to the WHO Guidance for the Use of Annex 2 (a copy of which is provided in the Appendix), there are two categories of public health events that require Member State notification to the WHO:

A) all events that fulfill any two of four situational public health criteria specified below.

B) any event involving one or more cases of four specific diseases (Small pox, SARS, Human Influenza caused by a new subtype, Poliomyelitis due to wildtype poliovirus), irrespective of the context in which they occur, because they are by definition unusual or unexpected and may cause serious public health impact.<sup>148</sup>

Under the first category, the four situational public health criteria are:

1. Is the public health impact of the event serious? (yes/no)
2. Is the event unusual or unexpected? (yes/no)
3. Is there any significant risk of international spread? (yes/no)
4. Is there any significant risk of international travel or trade restrictions?  
(yes/no)<sup>149</sup>

The WHO guidance provides questions and examples of circumstances to be used when determining the answer to the four criteria above. Criterion one provides several questions, including one that asks if “the event [has] the potential to have a high public health impact?” The provided examples of circumstances that contribute to a high public health impact include a “pathogen with high potential to cause an epidemic” and “cases among health staff.” Given that

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<sup>146</sup> Epstein, Gady A. “SARS Outbreak Exposing Flaws in China Regime.” *Baltimoresun.com*, Baltimore Sun, 23 Apr. 2003, [www.baltimoresun.com/bal-te.china23apr23-story.html](http://www.baltimoresun.com/bal-te.china23apr23-story.html).

<sup>147</sup> Pasley, James. “How SARS Terrified the World in 2003, Infecting More than 8,000 People and Killing 774.” *Business Insider*, 20 Feb. 2020, [www.businessinsider.com/deadly-sars-virus-history-2003-in-photos-2020-2](http://www.businessinsider.com/deadly-sars-virus-history-2003-in-photos-2020-2).

<sup>148</sup> The World Health Organization, *WHO Guidance for the Use of Annex 2 of the INTERNATIONAL HEALTH REGULATIONS (2005)*, WHO/HSE/IHR/2010.4, [https://www.who.int/ihr/revised\\_annex2\\_guidance.pdf](https://www.who.int/ihr/revised_annex2_guidance.pdf)

<sup>149</sup> *Ibid.*



the virus had been identified as related to SARS-CoV and that cases were reported amongst healthcare staff in Wuhan, under the guidelines, the CCP's answer to the above question should have been "yes" and the first criterion should have been satisfied.

Similarly, the CCP's answer to the second criterion should have also been "yes." The outbreak in Wuhan was unusual, in that it was caused by an unknown agent and from an unknown source; two examples provided in the WHO guidance. At this point, two criteria having been satisfied, the CCP should have notified the WHO in accordance with Annex 2. **The CCP failed to do so.**

An examination of the remaining criteria also suggests that both of the other criteria were satisfied. The third criterion assesses whether the event poses a significant risk of international spread. The guidance asks if there is "any factor that should alert WHO to the potential for cross border movement of the agent, vehicle or host?" During the 2003 SARS pandemic, the PRC did not publicly acknowledge the outbreak before the beginning of the Spring Festival travel season. As a result, SARS quickly spread in Guangdong before appearing in Hong Kong and countries outside of the PRC.<sup>150</sup> Given the direct correlation between the decision not to warn the public before the Spring Festival during the 2003 outbreak and the spread of the virus, the millions of trips abroad scheduled in late January and early February 2020 alone should have given the CCP cause to answer this criterion in the affirmative.

Finally, the fourth criterion regards significant risk to international travel and trade. WHO guidance questions include: "Have similar events in the past resulted in international restrictions? Is the source suspected or known to be a food product...that [is] imported/exported internationally? Are there requests for information by foreign officials or international media?" In the case of the early stages of the outbreak, the CCP's answer to criterion four should have been a resounding "yes." The 2003 SARS pandemic resulted in travel advisories and cargo quarantines. CCP officials knew that the cases were confirmed by laboratories to be SARS. The CCP knew the early outbreak was centered in or around the Huanan market, which included multiple species of animals known to carry coronaviruses that can infect humans. Local and international media outlets were beginning to break stories about the cases of atypical pneumonia.

In sum, as early as mid-December, and no later than December 27<sup>th</sup>, the CCP had enough information to assess it was legally obligated to inform the WHO that the outbreak in Wuhan was an event "that may constitute a Public Health Emergency of International Concern."<sup>151</sup> Had the CCP not been committed to covering up the outbreak, it would have answered YES to all four of the criteria and notified the WHO. **The CCP failed to do so.**

When considering the second category of public health events that Member States are legally bound to report to the WHO, the CCP's failure to fulfill their obligation under the IHR is even clearer. The second category requires notification of:

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<sup>150</sup> Epstein.

<sup>151</sup> The World Health Organization, *WHO Guidance for the Use of Annex 2 of the INTERNATIONAL HEALTH REGULATIONS* (2005), WHO/HSE/IHR/2010.4. [https://www.who.int/ihr/revised\\_annex2\\_guidance.pdf](https://www.who.int/ihr/revised_annex2_guidance.pdf).

Any event involving one or more cases of four specific diseases (Small pox, SARS, Human Influenza caused by a new subtype, Poliomyelitis due to wildtype poliovirus), irrespective of the context in which they occur, because they are by definition unusual or unexpected and may cause serious public health impact.<sup>152</sup>

The same WHO guidance defines a notifiable case of SARS as “an individual with laboratory confirmation of infection with SARS coronavirus (SARS-CoV) who either fulfils the clinical case definition of SARS”<sup>153</sup> or has worked with SARS-CoV in a laboratory. The clinical case definition for SARS consists of four criteria:

1. A history of fever, or documented fever; AND
2. One or more symptoms of lower respiratory tract illness (cough, difficulty breathing, shortness of breath); AND
3. Radiographic evidence of lung infiltrates consistent with pneumonia or acute respiratory distress syndrome (ARDS) or autopsy findings consistent with the pathology of pneumonia or ARDS without an identifiable cause; AND
4. No alternative diagnosis can fully explain the illness.<sup>154</sup>

As early as mid-December, when the 65-year-old gentleman was admitted to Wuhan Central, hospitals in the city were treating dozens of patients who satisfied this clinical definition of SARS. Several workers from the Huanan market and their family members presented with a fever, cough, lung infiltrates consistent with pneumonia, and no alternative diagnosis. On December 27<sup>th</sup> the Hubei Provincial Hospital of Integrated Chinese and Western Medicine informed the Wuhan CDC that a SARS-like novel coronavirus is responsible for the disease outbreak in Wuhan.<sup>155</sup> According to public reporting, there were at least seven patients who received laboratory confirmation of a SARS coronavirus infection.<sup>156</sup>

As stated in the WHO guidance, a single case of SARS, confirmed by both laboratory results and a clinical diagnosis, requires Member States to notify the WHO. By December 30<sup>th</sup>, CCP health authorities knew that at least seven patients in Wuhan met this requirement.

The next day, December 31<sup>st</sup>, WHO headquarters in Geneva directed the WHO China Country Office to seek verification of media reports concerning the ongoing outbreak. The PRC did not inform the WHO about the outbreak, their knowledge that multiple patients were diagnosed with SARS, or that the outbreak was being caused by a novel coronavirus genetically similar to SARS-CoV. **The CCP’s failure to notify the WHO about the outbreak was a violation of Article 6 of the IHR. The CCP’s failure to report the SARS cases under Annex**

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<sup>152</sup> *Ibid.*

<sup>153</sup> *Ibid.*

<sup>154</sup> *Ibid.*

<sup>155</sup> Page.

<sup>156</sup> Petersen, Eskild, et al. “Li Wenliang, a face to the frontline healthcare worker. The first doctor to notify the emergence of the SARS-CoV-2, (COVID-19), outbreak.” *International Journal of Infectious Diseases*, vol. 93, 1 Apr. 2020, pg. 205-207, doi:10.1016/j.ijid.2020.02.052

**2 was also violation of Article 6.** The CCP's failure to provide the WHO with the genetic sequence of the virus, already produced by the WIV, was likely also a violation of Article 6, which requires Member States to provide "all relevant public health information" about events that may constitute a PHEIC.

#### Similarity to CCP Actions during the 2003 SARS Pandemic

Given CCP malfeasance during the 2003 SARS pandemic was the basis for the 2005 reforms to the IHR, it is prudent to examine their failures in handling SARS and how they compare with the mishandling of COVID-19. During the early stages of the SARS outbreak, the PRC banned the Chinese press from reporting on the outbreak.<sup>157</sup> As early as January 27, 2003, classified documents in Beijing were produced discussing the outbreak.<sup>158</sup> Once it did notify the WHO, four months after the start of the outbreak, the CCP continued to provide inaccurate information about the number of SARS cases within its borders.<sup>159</sup>

Similar to the early days of COVID-19, requests for access to the epicenter of the SARS outbreak were denied by the CCP. Even after the WHO was admitted, the cover-up continued; CCP officials went so far as to put SARS patients in hospital rooms and in ambulances driving around the city to hide them from the WHO.<sup>160</sup> As mentioned earlier in this report, in early 2003 the CCP failed to warn the public about the outbreak prior to the massive travel season surrounding the Spring Festival.

In mid-February 2020, the CCP announced the firing of the Communist Party secretaries for Hubei province and Wuhan and punishments for hundreds of lower level government officials, as discussed above. The announcement was well received on Chinese social media, with one commenter supporting "the wise adjustment of the party central committee."<sup>161</sup> During the SARS pandemic, the CCP employed similar tactics, firing the PRC's health minister and the mayor of Beijing. These high-profile government officials were scapegoated in order to recover public support and protect the top leaders of the CCP, who in both instances have remained in power.<sup>162</sup>

It is evident that there are clear correlations between the CCP's behavior during the 2003 SARS pandemic and the ongoing COVID-19 global pandemic. To date we have identified nine behaviors that the CCP engaged in during both their failed handling of SARS and their cover-up regarding COVID-19:

CCP Actions	SARS	COVID-19
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<sup>157</sup> Rosenthal, Elisabeth, and Lawrence K. Altman. "China Raises Tally of Cases and Deaths in Mystery Illness." *The New York Times*, 27 Mar. 2003, [www.nytimes.com/2003/03/27/world/china-raises-tally-of-cases-and-deaths-in-mystery-illness.html](http://www.nytimes.com/2003/03/27/world/china-raises-tally-of-cases-and-deaths-in-mystery-illness.html).

<sup>158</sup> Tkacik, John. "An American Response to China's SARS Failures." *The Heritage Foundation*, 25 Apr. 2003, [www.heritage.org/asia/report/american-response-chinas-sars-failures](http://www.heritage.org/asia/report/american-response-chinas-sars-failures).

<sup>159</sup> Rosenthal.

<sup>160</sup> Epstein, Gady A. "Chinese Admit to SARS Mistakes." *Baltimoresun.com*, Baltimore Sun, 1 Apr. 2003, [www.baltimoresun.com/bal-te.sars21apr21-story.html](http://www.baltimoresun.com/bal-te.sars21apr21-story.html).

<sup>161</sup> Woo.

<sup>162</sup> *Ibid.*

Waited to inform the WHO?	✓	✓
Subsequently hid information from the WHO?	✓	✓
Hid their knowledge of the severity of the outbreak?	✓	✓
Disrupted press from reporting?	✓	✓
Response kept secret until after the Spring Festival travel season began?	✓	✓
Limited access of outside experts to epicenter of the outbreak?	✓	✓
Claimed the virus was under control?	✓	✓
Underreported number of cases?	✓	✓
Firing of select CCP officials as scapegoats?	✓	✓

The startling similarity in the CCP’s mishandling of the two outbreaks only adds to the evidence that the spread and impact of COVID-19 could have been prevented. The PRC had faced a similar crisis before, sought to hide it, and the world suffered for their mistake. When faced with a second, incredibly similar scenario, CCP officials doubled down on their past mistakes and COVID-19 became the second, more deadly and damaging chapter of a story that began in 2002.

#### Supply Chain Nationalization and Economic Manipulation

As early as February 3<sup>rd</sup>, the PRC’s National Development and Reform Commission (NDRC) assumed responsibility for the provision of medical supplies for the domestic COVID-19 response.<sup>163</sup> According to the Congressional Research Service (CRS), this nationalized control of the medical supply chain included “commandeer[ing] medical manufacturing and logistics down to the factory level.”<sup>164</sup> In addition, NDRC “has been directing the production and distribution of all medical-related production, **including U.S. companies’ production lines in China** (emphasis added), for domestic use.”<sup>165</sup> This enabled the PRC to increase production of face masks from 20 million to more than 100 million per day, at the expense of foreign companies being allowed to export their products – several manufactures have stated that the PRC would not authorize them to export PPE produced in their facilities.<sup>166</sup>

It is highly likely that China’s nationalization of the manufacturing capacity of foreign companies, including 3M and General Motors, directly impacted the ability of the United States and other countries to procure PPE on the global market. On the same day the PRC began seizing and nationalizing production means, the PRC’s Ministry of Commerce ordered bureaucrats, local

<sup>163</sup> “China Tweaks Authority over Medical Mask Supply amid Shortage.” *South China Morning Post*, 14 Feb. 2020, [www.scmp.com/economy/china-economy/article/3048744/coronavirus-mask-shortage-prompts-beijing-tweak-authority](http://www.scmp.com/economy/china-economy/article/3048744/coronavirus-mask-shortage-prompts-beijing-tweak-authority).

<sup>164</sup> Congressional Research Service. *COVID-19: China Medical Supply Chains and Broader Trade Issues* (R46304), Prepared by Karen M. Sutter, Andres B. Schwarzenberg, and Michael D. Sutherland. Washington: Library of Congress, 6 Apr. 2020. <https://crsreports.congress.gov/product/pdf/R/R46304>

<sup>165</sup> *Ibid.*

<sup>166</sup> *Ibid.*

officials, and domestic industries to procure medical supplies and related raw material inputs on the global market. 51 medical suppliers and distributors across 14 countries and regions were targeted. As a result, the PRC experienced sharp increases in PPE imports and marked decreases in related exports.<sup>167</sup>

These efforts were often implemented through non-traditional buyers, likely in an effort to reduce competition. In Australia, for example, two different, Chinese-owned property development firms – Risland and Greenland Australia – procured massive amounts of PPE on the Australian market, **at the direction of the PRC government**. According to CRS:

Risland—a wholly-owned subsidiary of one of China’s largest property developers, Country Garden Holdings—reportedly shipped 82 tons of medical supplies from Australia to China on February 24, 2020. The shipment included 100,000 medical gowns and 900,000 pairs of gloves. Greenland Australia—a subsidiary of another large Chinese property developer backed by the Chinese government, Greenland Group—implemented instructions from the Chinese government to secure bulk supplies of medical items from the global market. Greenland reportedly sourced from Australia and other countries, 3 million protective masks, 700,000 hazmat suits, and 500,000 pairs of gloves for export to China over several weeks in January and February 2020.<sup>168</sup>

In addition to nationalizing foreign companies and buying up resources from the open market, the CCP also threatened to cut off supplies to countries who questioned their false account of the early stages of the pandemic. **One article, published by the state-run press agency Xinhua News, stated that if the CCP chose to ban pharmaceutical ingredient exports to the United States, the country would be “plunged into the mighty sea of coronavirus.”**<sup>169</sup> This tactic, of threatening foreign governments with export bans or supply chain disruptions, is one that the CCP has deployed repeatedly during the pandemic.

This tactic of economic manipulation not only impacted the initial stages of the outbreak, affecting the ability of countries to procure necessary medical equipment, but is currently being used to pressure and coerce countries seeking accountability for the outbreak and the CCP’s cover-up. In late April, Australia joined the ranks of countries requesting an international investigation into the origins of COVID-19 and the early stages of the outbreak. On April 26<sup>th</sup>, an interview with PRC Ambassador to Australia Cheng Jingye was published in the Australian Financial Review.<sup>170</sup>

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<sup>167</sup> *Ibid.*

<sup>168</sup> *Ibid.*

<sup>169</sup> “理直气壮，世界应该感谢中国。” *Xinhua News*, 4 Mar. 2020, [www.xinhuanet.com/2020-03/04/c\\_1125660473.htm](http://www.xinhuanet.com/2020-03/04/c_1125660473.htm).

<sup>170</sup> Tillett, Andrew. “China Consumer Backlash Looms over Morrison's Coronavirus Probe.” *Australian Financial Review*, 26 Apr. 2020, [www.afr.com/politics/federal/china-consumer-backlash-looms-over-morrison-s-coronavirus-probe-20200423-p54mpl](http://www.afr.com/politics/federal/china-consumer-backlash-looms-over-morrison-s-coronavirus-probe-20200423-p54mpl).



In the interview, Ambassador Cheng accused the Australian government of “teaming up with those forces in Washington”<sup>171</sup> and “launch[ing] a kind of political campaign against China.”<sup>172</sup> When he was asked about the impact of the request for a coronavirus inquiry on PRC exports to Australia, the Ambassador replied “It is up to the people to decide. Maybe the ordinary people will say ‘Why should we drink Australian wine? Eat Australian beef?’”<sup>173</sup> Within days, the PRC suspended beef imports from Australia’s four largest meat processors. On May 18<sup>th</sup>, the PRC announced tariffs totaling 80.5% on Australian barley imports that will remain in place for five years. The actions were justified as being in response to Australian “dumping” of barley – Australia is the largest supplier of barley to the PRC, who is the world’s largest importer of the grain. The tariffs are expected to essentially end a \$1 billion per year trade. The brunt of the impact will be felt by Australian farmers, as the PRC is able to shift their purchases to other countries.<sup>174</sup>

### The Likely Impact of the CCP’s Cover Up on the Global Response

As a result of intentional efforts to mislead the global community and delays in releasing factual information about the virus, the CCP cover-up greatly impacted the global response to COVID-19. Even once the response began, it was informed by WHO guidelines developed based on CCP lies and disinformation. According to John Mackenzie, a member of the WHO Executive Committee, the international response would have been different if not for the CCP’s “reprehensible”<sup>175</sup> obfuscation of the outbreak’s extent. When asked about the delay, Zuo-Feng Zhang, an epidemiologist at the University of California, Los Angeles, said:

This is tremendous. If they took action six days earlier, there would have been much fewer patients and medical facilities would have been sufficient. We might have avoided the collapse of Wuhan’s medical system.<sup>176</sup>

It is possible to calculate, at least partially, the impact of the CCP cover-up on the spread of the virus. A study conducted by researchers at the University of Southampton examined the impact of three non-pharmaceutical interventions (NPIs) – travel restrictions, containment measures, and contact restrictions (social distancing, masks, etc.) – on the spread of the virus in China. According to their research, the implementation of these NPIs prior to the January 23<sup>rd</sup> lockdown of Wuhan would have reduced the number of cases by 66% (one week earlier), 86% (two weeks earlier), or 95% (three weeks earlier).<sup>177</sup>

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<sup>171</sup> *Ibid.*

<sup>172</sup> *Ibid.*

<sup>173</sup> *Ibid.*

<sup>174</sup> Patton, Dominique. “China Hits Australia with Barley Tariff in Latest Blow to Relations.” *Reuters*, 18 May 2020, [www.reuters.com/article/us-china-australia-barley/china-hits-australia-with-barley-tariff-in-latest-blow-to-relations-idUSKBN22U1J6](https://www.reuters.com/article/us-china-australia-barley/china-hits-australia-with-barley-tariff-in-latest-blow-to-relations-idUSKBN22U1J6).

<sup>175</sup> Wong, Sue-Lin. *WHO Expert Says China Too Slow to Report Coronavirus Cases*. Financial Times, 5 Feb. 2020, [www.ft.com/content/8ede7e92-4749-11ea-aeb3-955839e06441](https://www.ft.com/content/8ede7e92-4749-11ea-aeb3-955839e06441).

<sup>176</sup> “China Didn’t Warn Public of Likely Pandemic For 6 Key Days.” *AP NEWS*, 15 Jan. 2020, <https://apnews.com/68a9e1b91de4ffc166acd6012d82c2f9>.

<sup>177</sup> Lai, Shengjie, et al. “Effect of Non-Pharmaceutical Interventions for Containing the COVID-19 Outbreak in China.” *MedRxiv*, 2020, doi:10.1101/2020.03.03.20029843.



By comparing the earlier timeline to the information in this study it is clear CCP health officials and senior leadership had the information required, at a date early enough, to reduce China's COVID-19 cases by at least 86% compared to the estimated caseload at the end of February.<sup>178</sup> According the study, there are three potential scenarios in which China could have implemented NPIs earlier than the January 23<sup>rd</sup> lockdown of Wuhan:

### **Scenario 1**

After receiving the December 30<sup>th</sup> laboratory results confirming a case of SARS, Dr. Ai informed the Department of Public Health. Here, CCP health officials comply with their legal obligations under the 2005 IHR and inform the WHO of a confirmed SARS outbreak within 24 hours. The WHO provides expert advice and the National Health Commission and Wuhan officials implement similar NPIs as were successful during the 2003 SARS pandemic. In this scenario, more than 95% of the estimated cases in China at the end of February would have been prevented. Such a large reduction in caseload would have prevented the collapse of the Wuhan health system and reduced the spread of the virus. It is highly likely that this would have prevented COVID-19 from becoming a global pandemic.

### **Scenario 2**

Here, the CCP implements NPIs prior to January 9<sup>th</sup>, two weeks earlier than it did. As January progressed, caseloads were climbing. The Department of Public Health knew about the confirmed SARS cases, the National Health Commission had been informed by two separate labs that the novel coronavirus was similar to SARS-CoV, and local hospital management knew that their healthcare staff was becoming infected and wearing personal protective equipment in response. Instead of punishing those who talked about it, the CCP institutes a public response to the virus. Had the CCP instituted NPIs prior to January 9<sup>th</sup>, it would have reduced the estimated number of cases in China at the end of February by 86%. It is likely that this would have prevented COVID-19 from becoming a global pandemic.

### **Scenario 3**

The final scenario is based on the January 14<sup>th</sup> teleconference between senior CCP leadership. Instead of ordering a secret response and having the National Health Commission issue confidential response plans to provincial health officials, General Secretary Xi could have ordered the implementation of NPIs. Instead of choosing to keep the information hidden for another six days, the senior leaders warn about the forthcoming pandemic, as well as the ongoing human-to-human transmission. Had the CCP instituted NPIs in the days following the teleconference, prior to January 16<sup>th</sup>, it is estimated that at least 66% of cases in China at the end of February could have been prevented.

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<sup>178</sup> *Ibid.*

At a minimum, it is estimated the CCP could have prevented two-thirds of cases in China before the end of February. Such a massive reduction of cases would have enabled a more focused response and the bolstering of the Wuhan health system, as opposed to its collapse. It would have made contact tracing easier by reducing the number of cases to track. Simply put, a transparent, rules-based government that provided accurate and timely information to the international community could have prevented a global pandemic. **Instead, the CCP's lies, cover-up, and oppression of whistleblowers cost thousands of Chinese citizens and hundreds of thousands of others around the world their lives.**

#### IV. THE WUHAN INSTITUTE OF VIROLOGY

The Wuhan Institute of Virology (WIV) has featured prominently in many of the discussions regarding the origins of COVID-19. While the broad consensus of the scientific and intelligence communities is that the virus is natural in origin, some experts have hypothesized that SARS-CoV-2 leaked from the WIV through improperly handled material or infected staff. Others have been quick to dismiss these claims based on a low probability of such an event occurring.<sup>179</sup> Other experts initially identified the wildlife markets as the origination point of human infection. However, without the epidemiological data from “patient zero,” the destroyed lab samples, or the exact animal source of the virus, we may never discern the true origin of SARS-CoV-2. However, it is prudent to examine what is currently known about this institute, including the virus research that occurs at its 20 laboratories.

##### Background

The WIV was founded in 1956 as the Wuhan Microbiology Laboratory and has operated under the administration of the Chinese Academy of Sciences since 1978.<sup>180</sup> The facility currently hosts laboratories meeting a variety of different safety protocols ranging from Biosafety Level II (BSL-2), roughly equivalent to a dentist's office, to Biosafety Level IV (BSL-4), the highest level of biosafety containment. According to the U.S. Department of Health and Human Services:

Biosafety Level 4 is required for work with dangerous and exotic agents that pose a high individual risk of aerosol-transmitted laboratory infections and life-threatening disease that is frequently fatal, for which there are no vaccines or treatments, or a related agent with unknown risk of transmission.<sup>181</sup>

According to the WIV's website, the facility houses 17 Biosafety Level II (BSL-2) laboratories, two Biosafety Level III (BSL-3) laboratories, and one Biosafety Level IV (BSL-4) laboratory.

Currently, the Wuhan Institute of Virology hosts four scientific research groups: The Center for Molecular Virology and Virus Pathology, Center for Molecular Biology and Nanobiology,

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<sup>179</sup> Barclay, Eliza. “Why These Scientists Still Doubt the Coronavirus Leaked from a Chinese Lab.” *Vox*, 23 Apr. 2020, [www.vox.com/2020/4/23/21226484/wuhan-lab-coronavirus-china](http://www.vox.com/2020/4/23/21226484/wuhan-lab-coronavirus-china).

<sup>180</sup> “History.” *Wuhan Institute of Virology*, [http://english.whiov.cas.cn/About\\_Us2016/History2016/](http://english.whiov.cas.cn/About_Us2016/History2016/).

<sup>181</sup> United States, Department of Health and Human Services. *Biosafety in Microbiological and Biomedical Laboratories*, 5th Edition. Dec. 2009. <https://www.cdc.gov/labs/pdf/CDC-BiosafetyMicrobiologicalBiomedicalLaboratories-2009-P.PDF>

Center for Bacteria and Virus Resources and Application, and Center for Emerging Infectious Diseases.<sup>182</sup> The Director of the Center for Emerging Infectious Diseases is Shi Zhengli, who also runs the Emerging Viruses Group within the Center.<sup>183</sup>

#### History of the BSL-4 Lab

The WIV's BSL-4 lab was constructed as a result of an agreement between the PRC and France that was signed after the 2003 SARS pandemic.<sup>184</sup> At the time, all BSL-3 labs in the PRC were controlled by the PRC's People's Liberation Army (PLA). Then-President of France, Jacques Chirac, and his Prime Minister, Jean-Pierre Raffarin, approved the project despite concerns from both the French Ministry of Defense and French intelligence services – Raffarin himself described it as “a political agreement.”<sup>185</sup> The PRC was suspected of having a biological warfare program, and the military and intelligence services were worried that the dual-use technology required to build a BSL-4 lab could be used misused by the PRC government. The uneasy compromise reached within the French government was that the agreement would require joint PRC-France research to be conducted in the lab, with French researchers present.<sup>186</sup>

In mid-June 2004, four months before the deal was finalized, the French Directorate-General for External Security (DGSE) warned the French government that the PRC was planning to develop a total of five BSL-4 labs, including two managed by the military. This ran counter to the PRC's public claims that it was only seeking to build one such lab. Despite repeated concerns from the French Ministry of Defense and intelligence services, French leadership continued to move forward with the deal. Prime Minister Raffarin authorized the exportation of four mobile BSL-3 labs to the PRC, a decision that was poorly received by the French military.<sup>187</sup>

The project did not progress well. According to one French diplomat, “our trust in the Chinese waned during this cooperation.”<sup>188</sup> There were disagreements between the French architecture firm hired to design the facility and the local Chinese construction company. The company hired to certify the building quit without warning over liability concerns. After an attempt by the PRC to use an unapproved construction company in 2014,<sup>189</sup> the lab eventually opened in 2015.<sup>190</sup> Repairs were required the very next year due to the use of bleach in the containment showers by personnel at the WIV, delaying the formal opening of the lab until 2017.

The issues extend beyond the construction of the BSL-4 lab itself. In 2016, the PRC requested dozens of the containment suits required to work in the lab. The French Dual-Use

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<sup>182</sup> “Organization.” *Wuhan Institute of Virology*. [http://www.whiov.cas.cn/jgsz\\_160229/](http://www.whiov.cas.cn/jgsz_160229/)

<sup>183</sup> “Center for Emerging Infectious Disease.” *Wuhan Institute of Virology*, [http://english.whiov.cas.cn/Research2016/Group2016/201411/t20141114\\_130855.html](http://english.whiov.cas.cn/Research2016/Group2016/201411/t20141114_130855.html)

<sup>184</sup> “About WIV.” *Wuhan Institute of Virology*, [http://english.whiov.cas.cn/About\\_Us2016/Brief\\_Introduction2016/](http://english.whiov.cas.cn/About_Us2016/Brief_Introduction2016/).

<sup>185</sup> Izambard, Antoine. “L'histoire Secrète Du Laboratoire P4 De Wuhan Vendu Par La France à La Chine.” *Challenges*, 30 Apr. 2020, [www.challenges.fr/entreprise/sante-et-pharmacie/revelations-l-histoire-secrete-du-laboratoire-p4-de-wuhan-vendu-par-la-france-a-la-chine\\_707425](http://www.challenges.fr/entreprise/sante-et-pharmacie/revelations-l-histoire-secrete-du-laboratoire-p4-de-wuhan-vendu-par-la-france-a-la-chine_707425).

<sup>186</sup> *Ibid.*

<sup>187</sup> *Ibid.*

<sup>188</sup> *Ibid.*

<sup>189</sup> *Ibid.*

<sup>190</sup> “About WIV.” *Wuhan Institute of Virology*, [http://english.whiov.cas.cn/About\\_Us2016/Brief\\_Introduction2016/](http://english.whiov.cas.cn/About_Us2016/Brief_Introduction2016/).

Commission, tasked with considering exports of sensitive equipment, rejected their request. According to French reporting, the request was “well above the needs of the Wuhan [lab].”<sup>191</sup> **This continued to fuel concerns within the French Ministry of Defense that the PRC was seeking to engage in military research or open a second BSL-4 lab for military means.** Despite the agreement that the BSL-4 lab would be a site of joint research, and an announcement at the 2017 inauguration by then Prime Minister Bernard Cazeneuve of 5 million euros in funding for that research, to date there has only been one French scientist assigned to the lab. His tour ends this year.<sup>192</sup>

Finally, it is important to note the direct influence of the CCP within the WIV. The Director General of the institute is Wang Yanyi,<sup>193</sup> who joined the China Zhi Gong Party, a CCP controlled minority party, in 2010. In 2018, the same year she became the Director General of the WIV, she was elected the Deputy Director of the Wuhan Municipal Party Committee.<sup>194</sup> Until early 2020, the BSL-4 lab was managed by Yuan Zhiming.<sup>195</sup> Yuan is the President of the Chinese Communist Party Committee within the Wuhan Branch of the Chinese Academy of Sciences, to which the WIV belongs.<sup>196</sup> Local CCP leaders not only run the WIV itself, but also directly managed the BSL-4 lab.<sup>197</sup> According to a French diplomat, Yuan’s performance and management was subpar – the lab has been underutilized and the most talented scientists have left. After the SARS-CoV-2 outbreak began, Yuan was replaced on January 31, 2020.<sup>198</sup> In a possible fulfillment of the concerns raised by the French defense and intelligence services almost two decades prior, he was succeeded by Major General Chen Wei, the PRC’s top biowarfare expert.<sup>199</sup>

#### Shi Zhengli (“Bat-Woman”) and Gain-of-Function Research

The lead expert for emerging infectious diseases is Shi Zhengli. Nicknamed “bat woman” by her professional colleagues, Shi has spent more than 16 years researching bats and coronaviruses. This work often involves visiting caves throughout the PRC to collect blood, saliva samples, fecal swaps, urine, and fecal pellets from wild bats in order to identify and catalogue wild coronaviruses.<sup>200</sup> As of 2017, more than 300 unique bat coronavirus sequences

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<sup>191</sup> *Ibid.*

<sup>192</sup> Izambard.

<sup>193</sup> “Directors.” *Wuhan Institute of Virology*, [http://english.whiov.cas.cn/About\\_Us2016/Directors2016/](http://english.whiov.cas.cn/About_Us2016/Directors2016/).

<sup>194</sup> “Wang Yanyi, Deputy Director of Wuhan Virus Institute, Was Elected to the Deputy Director of the Wuhan Municipal Party Committee.” *武汉病毒所副所长王延轶当选致公党武汉市副主任委员*, 13 Oct. 2018, [www.whiov.ac.cn/xwdt\\_105286/zhxw/201810/t20181023\\_5148932.html](http://www.whiov.ac.cn/xwdt_105286/zhxw/201810/t20181023_5148932.html).

<sup>195</sup> Izambard.

<sup>196</sup> “Directors.” *Wuhan Branch, Chinese Academy of Sciences*, <http://english.whb.cas.cn/au/ds/>.

<sup>197</sup> Izambard.

<sup>198</sup> *Ibid.*

<sup>199</sup> Huang, Yanzhong. “U.S.-Chinese Distrust Is Inviting Dangerous Coronavirus Conspiracy Theories.” *Foreign Affairs*, 20 Apr. 2020, [www.foreignaffairs.com/articles/united-states/2020-03-05/us-chinese-distrust-inviting-dangerous-coronavirus-conspiracy](https://www.foreignaffairs.com/articles/united-states/2020-03-05/us-chinese-distrust-inviting-dangerous-coronavirus-conspiracy).

<sup>200</sup> Qiu, Jane. *How China's 'Bat Woman' Hunted Down Viruses from SARS to the New Coronavirus*. June 2020, [www.scientificamerican.com/article/how-chinas-bat-woman-hunted-down-viruses-from-sars-to-the-new-coronavirus1/](https://www.scientificamerican.com/article/how-chinas-bat-woman-hunted-down-viruses-from-sars-to-the-new-coronavirus1/).

had been collected.<sup>201</sup> Shi has published extensively on coronaviruses and their ability to infect humans, including a 2005 paper that proved “bats are natural reservoirs of SARS-like coronaviruses.”<sup>202</sup>

In recent months, particular attention has been given to a 2015 paper entitled “A SARS-like cluster of circulating bat coronavirus shows potential for human emergence.”<sup>203</sup> Shi and her colleagues, along with researchers from the University of North Carolina at Chapel Hill, Harvard Medical School, the Institute of Microbiology in Switzerland, and the U.S. National Center for Toxicological Research, conducted gain-of-function research with SHC014-CoV, a wild coronavirus.<sup>204</sup> Gain-of-function research is research that has “the potential to enhance the pathogenicity or transmissibility of potential pandemic pathogens.”<sup>205</sup>

During the 2015 research project, Shi and her colleagues used a SARS-CoV reverse genetics system to create a chimeric (hybrid) virus by inserting the spike protein from SHC014 into a mouse-adapted SARS-CoV backbone.<sup>206</sup> (Spike proteins are the major surface structures that enable coronaviruses to bind to receptors on human cells.<sup>207</sup>) This new virus was then shown to bind to a specific receptor (ACE2) in humans, replicate “efficiently”<sup>208</sup> in primary human airways cells, and withstand antibodies and vaccines. Researchers concluded that the work “suggests a potential risk of SARS-CoV re-emergence from viruses currently circulating in bat populations.”<sup>209</sup> It is important to note that the genetic structure of this manufactured virus differs from SARS-CoV-2 by more than 5,000 nucleotides.<sup>210</sup> For context, the entire genetic sequence of SARS-CoV-2 is approximately 30,000 nucleotides.<sup>211</sup>

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<sup>201</sup> Cyranoski, David. “Bat Cave Solves Mystery of Deadly SARS Virus - and Suggests New Outbreak Could Occur.” *Nature News*, 1 Dec. 2017, [www.nature.com/articles/d41586-017-07766-9](http://www.nature.com/articles/d41586-017-07766-9).

<sup>202</sup> Li, Wendong et al. “Bats are Natural Reservoirs of SARS-like Coronaviruses.” *Science* vol. 310, 5748 (2005): 676-679. doi:10.1126/science.1118391

<sup>203</sup> Menachery, Vineet D et al. “A SARS-like cluster of circulating bat coronaviruses shows potential for human emergence.” *Nature medicine* vol. 21, 12 (2015): 1508-13. doi:10.1038/nm.3985

<sup>204</sup> *Ibid.*

<sup>205</sup> “Gain of Function Research.” National Institutes of Health, U.S. Department of Health and Human Services, <https://osp.od.nih.gov/biotechnology/gain-of-function-research/>.

<sup>206</sup> Menachery.

<sup>207</sup> Saplakoglu, Yasemin. “Researchers Map Structure of Coronavirus ‘Spike’ Protein.” *Scientific American*, 21 Feb. 2020, [www.scientificamerican.com/article/researchers-map-structure-of-coronavirus-spike-protein/](http://www.scientificamerican.com/article/researchers-map-structure-of-coronavirus-spike-protein/).

<sup>208</sup> Menachery

<sup>209</sup> *Ibid.*

<sup>210</sup> Liu, Shan-Lu et al. “No credible evidence supporting claims of the laboratory engineering of SARS-CoV-2.” *Emerging microbes & infections* vol. 9, 1 505-507. 26 Feb. 2020, doi:10.1080/22221751.2020.1733440

<sup>211</sup> Sah, Ranjit, et al. “Complete Genome Sequence of a 2019 Novel Coronavirus (SARS-CoV-2) Strain Isolated in Nepal.” *Microbiology Resource Announcements*, American Society for Microbiology, 12 Mar. 2020, [mra.asm.org/content/9/11/e00169-20](http://mra.asm.org/content/9/11/e00169-20).

<sup>212</sup> *Ibid.*



new diseases<sup>213</sup> and was a USAID partner for the PREDICT project, which sought to identify “new emerging infectious disease that could become a threat to human life.”<sup>214</sup>

U.S. funding for all gain-of-function research, both within the United States and abroad, was paused in October 2014 due to safety concerns not related to the WIV.<sup>215</sup> The bulk of the research for the 2015 paper had already been completed and the NIH allowed the researchers to move forward.<sup>216</sup> After the NIH developed more advanced and safety-conscious policies related to gain-of-function research, new guidance was released in January 2017 and the pause lifted.<sup>217</sup> However, on April 19, 2020, the Deputy Director for Extramural Research at the NIH informed EcoHealth Alliance that the NIH was “pursuing suspension of Wuhan Institute of Virology from participation in federal programs.”<sup>218</sup> Five days later, the project was terminated entirely. Due to the ongoing investigation, the NIH has not yet released additional details.<sup>219</sup>

### Safety Issues and Historical Precedent

Questions of safety at the WIV have persisted for some time and come in the broader context of a history of lab accidents in the PRC. Between April 22<sup>nd</sup> and April 29<sup>th</sup>, 2004, the PRC reported nine new cases of SARS linked to an accident at a government lab in Beijing. Two of those cases were graduate students conducting research at the PRC’s National Institute of Virology Laboratory (NIVL).<sup>220</sup> According to the WHO, the NIVL was conducting research using both live and inactivated samples of SARS-CoV, the virus that causes SARS in humans.<sup>221</sup> The graduate students, a 26-year-old postgraduate student and a 31-year-old post-doctoral student, were infected in two separate incidents, two weeks apart.<sup>222</sup> As a result of the graduate students becoming infected, seven other additional cases of SARS in China and one fatality were confirmed.<sup>223</sup>

In addition, two State Department cables from early 2018 reportedly raised the issue of safety concerns at the WIV (copies included in the Appendix). The cables came from State Department personnel at Embassy Beijing and Consulate General Wuhan and focused on issues related to

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<sup>213</sup> “About.” *EcoHealth Alliance*, [www.ecohealthalliance.org/about](http://www.ecohealthalliance.org/about).

<sup>214</sup> “PREDICT.” *EcoHealth Alliance*, [www.ecohealthalliance.org/program/predict](http://www.ecohealthalliance.org/program/predict).

<sup>215</sup> “Gain of Function Research.” National Institutes of Health, U.S. Department of Health and Human Services, <https://osp.od.nih.gov/biotechnology/gain-of-function-research/>.

<sup>216</sup> Menachery

<sup>217</sup> “Gain of Function Research.” National Institutes of Health, U.S. Department of Health and Human Services, <https://osp.od.nih.gov/biotechnology/gain-of-function-research/>.

<sup>218</sup> Geraghty, Jim. “NIH: We Can’t Release Our Papers about the Wuhan Institute of Virology Because of a Pending Investigation.” *National Review*, 1 June 2020, [www.nationalreview.com/corner/nih-we-cant-release-our-papers-about-the-wuhan-institute-of-virology-because-of-a-pending-investigation/](http://www.nationalreview.com/corner/nih-we-cant-release-our-papers-about-the-wuhan-institute-of-virology-because-of-a-pending-investigation/).

<sup>219</sup> *Ibid.*

<sup>220</sup> “SARS Update—May 19, 2004.” *Centers for Disease Control and Prevention*, 19 May 2004, [www.cdc.gov/sars/media/2004-05-19.html](http://www.cdc.gov/sars/media/2004-05-19.html).

<sup>221</sup> “China’s Latest SARS Outbreak Has Been Contained, but Biosafety Concerns Remain – Update 7.” *World Health Organization*, 18 May 2004, [www.who.int/csr/don/2004\\_05\\_18a/en/](http://www.who.int/csr/don/2004_05_18a/en/).

<sup>222</sup> Walgate, Robert. “SARS Escaped Beijing Lab Twice.” *Genome Biology*, BioMed Central, 27 Apr. 2004, <https://genomebiology.biomedcentral.com/articles/10.1186/gb-spotlight-20040427-03>.

<sup>223</sup> “SARS Update—May 19, 2004.” *Centers for Disease Control and Prevention*, 19 May 2004, [www.cdc.gov/sars/media/2004-05-19.html](http://www.cdc.gov/sars/media/2004-05-19.html).



safety and management weaknesses at the WIV. Scientists at the WIV themselves noted “a serious shortage of appropriately trained technicians and investigators needed to safely operate this high-containment laboratory.”<sup>224</sup> The cables also questioned the PRC’s commitment to prioritizing the important research for which the lab was designed.

(b)(6) Thus, while the BSL-4 lab is ostensibly fully accredited, its utilization is limited by lack of access to specific organisms and by opaque government review and approval processes. As long as this situation continues, Beijing’s commitment to prioritizing infectious disease control - on the regional and international level, especially in relation to highly pathogenic viruses, remains in doubt.

*Fig. 6 – Excerpt from January 19, 2018 Cable from the U.S. Embassy in Beijing to State Department Headquarters in Washington, D.C.*

Shi seemed aware of these issues. According to her own public statements, Shi was very worried that an incident similar to the one in 2004 could have happened at the WIV and that her lab could have been the origin of the COVID-19 pandemic. In an interview, Shi recounted how she reexamined several years of her own lab’s records to check for mishandling of material and improper disposal. She also compared the coronavirus samples in her collection to samples of SARS-CoV-2, the virus that causes COVID-19. Shi later stated she was relieved after completing this review and failing to find a match – “That really took a load off my mind. I had not slept a wink for days.”<sup>225</sup>

While this is not evidence that the ongoing pandemic is the result of a release, accidental or deliberate, from the lab, or what the staffing competency was at the time of the outbreak of COVID-19 in late 2019, it is important to consider these concerns in light of the PRC’s history with lab accidents. However, given that the CCP has refused to share samples from the WIV and other sites in the PRC, it is impossible for the international community to verify the results of Shi’s review.

### Lack of Clarity

Ultimately, no conclusion has been reached as to what role, if any, the WIV played in the origins of the COVID-19 pandemic. Francis Collins, the Director of the National Institutes of Health, has publicly stated that he has “no way of knowing” if the outbreak originated at the WIV.<sup>226</sup> However, there are a series of outstanding issues with the WIV and its BSL-4 lab that compound the ongoing debate:

- The CCP’s refusal to allow the WIV to share samples of the virus, as discussed elsewhere in this report;

<sup>224</sup> Rogin, Josh. “Opinion | State Department Cables Warned of Safety Issues at Wuhan Lab Studying Bat Coronaviruses.” *The Washington Post*, 14 Apr. 2020, [www.washingtonpost.com/opinions/2020/04/14/state-department-cables-warned-safety-issues-wuhan-lab-studying-bat-coronaviruses/](https://www.washingtonpost.com/opinions/2020/04/14/state-department-cables-warned-safety-issues-wuhan-lab-studying-bat-coronaviruses/).

<sup>225</sup> Qiu.

<sup>226</sup> Brennan, Zachary. “NIH Director: ‘No Way of Knowing’ If Coronavirus Escaped from Wuhan Lab.” *POLITICO*, 27 May 2020, [www.politico.com/news/2020/05/27/nih-director-wuhan-coronavirus-collins-285681](https://www.politico.com/news/2020/05/27/nih-director-wuhan-coronavirus-collins-285681).

- The history of gain-of-function research on coronaviruses at the facility;
- The two leaks of SARS-CoV from the NIVL during the 2003 SARS pandemic;
- Shi's self-described anxiety that her lab may have been the source of the outbreak;
- The CCP's refusal to allow international investigators access to the WIV;
- Concerns from the French government regarding the secretive relationship between the lab and the PRC's military;
- The PRC's military takeover of the BSL-4 lab; and
- The general lack of transparency and CCP cover-up of the origins of the COVID-19 global pandemic.

Until the CCP agrees to cooperate in a fully transparent manner with the WHO, other countries, and the international scientific community, it will be impossible to gather the concrete evidence needed to prove, or disprove, this theory. The CCP's decision to require labs other than the WIV to destroy their samples, as discussed earlier in the report, further obfuscates the issue. As a direct result of the CCP cover-up during the early stages of the pandemic, it is certain that this debate will continue.

## V. WORLD HEALTH ORGANIZATION MISSTEPS

There has been much international criticism of the WHO's handling of this pandemic. Journalists, public health experts, medical professionals, and academics have all questioned certain choices made by Director-General Tedros and other senior leaders within the WHO. It is important to note that in addition to the obligations imparted on Member States, the IHR requires certain actions and behaviors of the WHO. Among other obligations, the WHO is tasked with conducting global public health surveillance and assessment of significant public health events, disseminating public health information to Member States, and determining whether a particular event notified by a Member State under the IHR constitutes a PHEIC. **In each of these obligations, the WHO failed to fulfill its mandate.**

### Assessment of Significant Public Health Events and Dissemination of Public Health Information to Member States

Nothing in the IHR requires the WHO to rely solely on information provided by the Member State in whose territory a public health event is occurring. Instead, Article 9 of the IHR requires the WHO to evaluate reports from sources other than notifications or consultations conducted under the IHR process for their potential global health impact. The WHO's website hosts a "frequently asked questions" section about the 2005 IHR that refers to "WHO's mandate to seek verification of unofficial reports of events with potential international implications."<sup>227</sup> Article 9 requires that the WHO assess these reports "according to established epidemiological

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<sup>227</sup> "Frequently Asked Questions about the International Health Regulations (2005)." *World Health Organization*, 18 Aug. 2009, [www.who.int/ihr/about/faq/en/](http://www.who.int/ihr/about/faq/en/).

principles,”<sup>228</sup> before communicating the information to the Member State in whose territory the event is reportedly occurring. Additionally, the Article stipulates the “WHO shall make the information received available to the State Parties.”<sup>229</sup> Due to Taiwan’s exclusion from the WHO, its notification of SARS-like cases in the PRC, on the surface, appears to be the exact type of “unofficial” report that Article 9 was designed to address. As such, the WHO was obligated to examine Taiwan’s email notification on the basis of epidemiological and public health principles, not political ones resulting from the CCP’s views on Taiwan’s status, and pass the information to all WHO Member States. **The WHO failed to do so.**

It also appears that the WHO failed to investigate the widely reported warnings issued by Dr. Ho of the University of Hong Kong’s (UHK) Centre of Infection on January 4<sup>th</sup>. Dr. Ho stated that based on the uptick in cases, it was highly likely that human-to-human transmission was already occurring. He also warned about a potential surge of cases during the Spring Festival travel season.<sup>230</sup> Dr. Ho’s warning was significant because UHK’s School of Public Health has been a designated WHO Collaborating Centre for Infectious Disease Epidemiology and Control (WHO CC) since 2014. Among other areas of research, the WHO CC focuses on “emergency response to outbreaks of novel pathogens.”<sup>231</sup> As a member of the Li Ka Shing Faculty of Medicine at UHK, Dr. Ho is a member of the WHO CC.<sup>232</sup> Dr. Ho is well acquainted with coronaviruses and SARS, having published extensively on the diagnosis and treatment of SARS, as well as SARS-related hospital infection control and admission strategies.<sup>233</sup> In 2005, he and two others authored a chapter on infection control for a clinical guide to SARS.<sup>234</sup> Under Article 9, the WHO is mandated to investigate unofficial reports and warnings like those from Dr. Ho. Had the WHO done so, the world would have been warned about the high likelihood of human-to-human transmission sixteen days prior to the CCP confirming what Dr. Ho already knew. **In failing to investigate his warnings, the WHO violated Article 9 and ignored a member of their designated group of infectious disease control experts.**

Article 10 of the IHR requires the WHO to request verification of these unofficial reports from the Member State in which the events are reportedly occurring. There is no public evidence the WHO did so with regards to reports concerning human-to-human transmission. Article 10 also stipulates that should a Member State not accept the WHO’s offer of collaboration (which it is required to extend), the “WHO may, when justified by the magnitude of the public health risk, share with other State Parties the information available to it.”<sup>235</sup> Under the IHR, the WHO was fully empowered to not only demand the CCP respond to allegations made by the Taiwan CDC

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<sup>228</sup> 2005 IHR.

<sup>229</sup> *Ibid.*

<sup>230</sup> Choi, Jimmy. “Wuhan Virus Probably Is Spreading between People.” *RTHK*, 4 Jan. 2020, <https://news.rthk.hk/rthk/en/component/k2/1500994-20200104.htm>

<sup>231</sup> “WHO Collaborating Centre for Infectious Disease Epidemiology and Control.” *School of Public Health*, <https://sph.hku.hk/en/about-us/divisioncentreunit/who-collaborating-centre-for-infectious-disease-epidemiology-and-control>

<sup>232</sup> *Ibid.*

<sup>233</sup> PL Ho. *ORCID*, <http://orcid.org/0000-0002-8811-1308>

<sup>234</sup> Peiris, Malik, et. a. *Severe Acute Respiratory Syndrome: A Clinical Guide*. Malden, Mass: Blackwell Pub, 2005. Print.

<sup>235</sup> 2005 IHR.

and UHK WHO CC regarding human-to-human transmission, but also to share those warnings with the other WHO Member States if China refused to cooperate. **The WHO failed to do so.**

Article 11 mandates that the WHO transmit to all Member States, “as soon as possible,”<sup>236</sup> public health information it receives under Articles 5 – 10 that is necessary for Member States to respond to the public health risk. This includes unofficial reports under Article 9. The WHO did not transmit Taiwan’s report of evidence of human-to-human transmission to its Member States, violating its obligations under Article 11. **Likewise, there is no public record of the WHO transmitting to Member States Dr. Ho’s comments that human-to-human transmission was likely already occurring in Wuhan.**

#### Determining Whether a Particular Event Constitutes A PHEIC

Article 12 of the IHR provides the framework to be used by the WHO Director-General when considering the declaration of a PHEIC. Namely, it requires that the Director-General consider:

- (a) Information provided by the State Party;
- (b) The decision instrument contained in Annex 2;
- (c) The advice of the Emergency Committee;
- (d) Scientific principles as well as the available scientific evidence and other relevant information; and
- (e) An assessment of the risk to human health, of the risk of international spread of disease and of the risk of interference with international traffic.<sup>237</sup>

It has been clearly established that the CCP suppressed and failed to transmit critical scientific evidence to the WHO that could have better informed Director-General Tedros’ decision making when evaluating the need to declare a PHEIC. However, a review of the information available to Director-General Tedros on January 23<sup>rd</sup>, when he opted not to declare a PHEIC, shows that he failed to follow the framework in Article 12. The following information was either sent to the WHO or publicly reported prior to January 23<sup>rd</sup>:

- The possibility of human-to-human transmission (Taiwan and the University of Hong Kong)
- Evidence of limited human-to-human transmission, as reported by the WHO delegation to Wuhan.
- The confirmation by the CCP’s National Health Commission (NHC) that human-to-human transmission was occurring.
- The confirmation of cases among healthcare workers by the NHC.<sup>238</sup>
- The identification of a novel coronavirus as the cause of COVID-19.
- The full genetic sequence of SARS-CoV-2, showing an 87% similarity to the virus responsible for the 2003 SARS pandemic.

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<sup>236</sup> *Ibid.*

<sup>237</sup> *Ibid.*

<sup>238</sup> Schnirring, Lisa. “New Coronavirus Infects Health Workers, Spreads to Korea.” *CIDRAP*, 20 Jan. 2020, [www.cidrap.umn.edu/news-perspective/2020/01/new-coronavirus-infected-health-workers-spreads-korea](http://www.cidrap.umn.edu/news-perspective/2020/01/new-coronavirus-infected-health-workers-spreads-korea).

- Ongoing mass international travel of people in China related to the Spring Festival.
- The confirmation of COVID-19 cases in Thailand, Hong Kong, Japan, South Korea, Taiwan, and the United States.

Applying the decision instrument in the IHR's Annex 2, as directed in Article 12, should have resulted in a determination that the outbreak was a potential PHEIC. The available scientific evidence and relevant information regarding human-to-human transmission, along with the similarity of SARS-CoV-2 to the virus that caused the 2003 SARS outbreak, suggested a response similar to that in 2003 would be necessary. An assessment of the risk of international spread should have included, by necessity, the millions of international trips that the CCP allowed to depart from the PRC in mid-January, as well as the cases already confirmed in multiple countries outside of the PRC. In light of the media reports already available to him concerning the CCP's withholding of the fact that the virus was a coronavirus genetically similar to SARS, the Director-General should have acted appropriately.

By January 23<sup>rd</sup>, when the WHO's Emergency Committee was split on declaring a PHEIC, Director-General Tedros either knew, or should have known, that the outbreak centered in Wuhan was caused by a novel coronavirus genetically similar to the virus responsible for the 2003 SARS pandemic, that human-to-human transmission was occurring, that healthcare workers were being infected, and that at least four WHO Member States, in addition to Hong Kong and Taiwan, were reporting cases. When compared to the framework provided by Article 12, it is clear the preponderance of information available to Director-General Tedros, combined with approximately half of the members of the Emergency Committee recommending the declaration of a PHEIC, should have resulted in the Director-General declaring a Public Health Emergency of International Concern. Instead, Director-General Tedros declined to declare a PHEIC, traveled to Beijing five days later, and praised the CCP's handling of the outbreak and the "transparency" with which they shared information with the WHO and other countries.

Only after his return from the PRC did the Director-General declare a PHEIC, seven valuable days after he previously declined to do so. As stated earlier the report, the WHO has informed the Committee Minority that the decision to declare a PHEIC on January 30<sup>th</sup> was based on the confirmation of a case of human-to-human transmission in Vietnam. The case, a 27-year-old Vietnamese man who was diagnosed on January 22<sup>nd</sup>, was the first confirmed example of human-to-human transmission outside of the PRC<sup>239</sup> and was ongoing during the meeting of the Emergency Meeting. However, it is important to note the widespread understanding of health officials from multiple countries outside of the PRC that human-to-human transmissions was already occurring within the PRC prior to the confirmation of the case in Vietnam.

The decision of Director-General Tedros, and the divide amongst the Emergency Committee, appears to be of a political nature, not scientific. The chair of the Emergency Committee explained the lack of a recommendation supporting a PHEIC declaration was in part due to the

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<sup>239</sup> Phan, Lan T., et al. "Importation and Human-to-Human Transmission of a Novel Coronavirus in Vietnam: NEJM." *New England Journal of Medicine*, 27 Feb. 2020, [www.nejm.org/doi/full/10.1056/NEJMc2001272](http://www.nejm.org/doi/full/10.1056/NEJMc2001272).



negative perception of such a declaration by the people in the PRC responding to the outbreak.<sup>240</sup> It appears self-evident that this is a reference to the CCP, not doctors or patients in Wuhan. A similar political decision repeatedly delayed the declaration of a PHEIC in 2019 during the response to the Ebola outbreak in the Democratic Republic of the Congo.<sup>241</sup>

#### Delayed Recommendation of Prudent Medical Responses

As the world's leading global health international organization, the WHO is often looked to for expert technical advice. Unfortunately, through the pandemic, WHO guidance has routinely, and consistently, lagged behind the scientific community. Despite guidance issued in countries around the world, and urging by leading experts across scientific disciplines, WHO technical guidance has been outdated and slow to respond to new research. As discussed above, one of the earliest examples of this was the issue of human-to-human transmission. Taiwan, Hong Kong, and other governments instituted responses to the outbreak based on their experience and sound medical practice. The WHO delayed recognizing human-to-human transmission until after the CCP conceded it was ongoing.

In a similar manner, the WHO did not recommend the use of masks for the general public until June 5<sup>th</sup>, 137 days after the CCP confirmed that human-to-human transmission was occurring.<sup>242</sup> By comparison, the United States<sup>243</sup>, Chile, Ecuador<sup>244</sup>, Israel<sup>245</sup>, and countries across Europe had mandated or recommended the use of masks to their citizens by the end of April. Until early June it was the position of the WHO that only individuals who were sick and showed symptoms, or were caring for the sick, needed to wear masks.<sup>246</sup> **This recommendation ignored the widespread evidence and proof of human-to-human transmission on large scales, the data from the PRC regarding the high number of asymptomatic cases, and the general consensus of the global scientific community and government health ministries around the world.**

Most recently, the WHO has struggled with guidance on how COVID-19 is transmitted. WHO leadership has said repeatedly that aerosol transmission, that is the spreading of the virus through small airborne droplets, was not a significant method of transmission. As of August, the

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<sup>240</sup> Pillinger, Mara. "Analysis | The WHO Held off on Declaring the Wuhan Coronavirus a Global Health Emergency. Here's Why." *The Washington Post*, 26 Jan. 2020, [www.washingtonpost.com/politics/2020/01/26/who-held-off-declaring-wuhan-coronavirus-global-health-emergency-heres-why/](http://www.washingtonpost.com/politics/2020/01/26/who-held-off-declaring-wuhan-coronavirus-global-health-emergency-heres-why/).

<sup>241</sup> *Ibid.*

<sup>242</sup> Mandavilli, Apoorva. "W.H.O. Finally Endorses Masks to Prevent Coronavirus Transmission." *The New York Times*, 5 June 2020, [www.nytimes.com/2020/06/05/health/coronavirus-masks-who.html](http://www.nytimes.com/2020/06/05/health/coronavirus-masks-who.html).

<sup>243</sup> Kelleher, Suzanne Rowan. "CDC Recommends Wearing A Cloth Mask Whenever You Leave Home." *Forbes*, 3 Apr. 2020, [www.forbes.com/sites/suzannerowankelleher/2020/04/02/cdc-will-recommend-wearing-a-cloth-mask-when-ever-you-leave-your-home/](http://www.forbes.com/sites/suzannerowankelleher/2020/04/02/cdc-will-recommend-wearing-a-cloth-mask-when-ever-you-leave-your-home/).

<sup>244</sup> "LatAm Countries Turn to Face Masks to Contain Pandemic." *Xinhua*, [www.xinhuanet.com/english/2020-04/08/c\\_138956755.htm](http://www.xinhuanet.com/english/2020-04/08/c_138956755.htm).

<sup>245</sup> "A Fine for Not Wearing a Mask: These Are Israel's New Coronavirus Regulations." *Haaretz*, 20 Apr. 2020, [www.haaretz.com/israel-news/.premium-netanyahu-announced-easing-coronavirus-restrictions-here-s-what-you-need-to-know-1.8780064](http://www.haaretz.com/israel-news/.premium-netanyahu-announced-easing-coronavirus-restrictions-here-s-what-you-need-to-know-1.8780064).

<sup>246</sup> Wong, Tessa. "Coronavirus: Why Some Countries Wear Face Masks and Others Don't." *BBC News*, 12 May 2020, [www.bbc.com/news/world-52015486](http://www.bbc.com/news/world-52015486).



WHO's website only refers to aerosol transmission as occurring during certain medical procedures. In regard to widespread aerosol transmission, the website says:

There have been reported outbreaks of COVID-19 in some closed settings, such as restaurants, nightclubs, places of worship or places of work where people may be shouting, talking, or singing. In these outbreaks, aerosol transmission, particularly in these indoor locations where there are crowded and inadequately ventilated spaces where infected persons spend long periods of time with others, cannot be ruled out. More studies are urgently needed to investigate such instances and assess their significance for transmission of COVID-19.<sup>247</sup>

This guidance has been widely criticized by the scientific community. In an open letter published July 6<sup>th</sup>, 239 scientists from 32 countries called on the WHO to recognize the potential of airborne transmission of COVID-19.<sup>248</sup> Referencing research conducted by signers of the letter and the broader scientific community, the authors argue it is "beyond any reasonable doubt"<sup>249</sup> that viruses are released in aerosol droplets and can remain suspended in air. In the case of SARS-CoV-2, they argue that studies conducted after the SARS pandemic of 2002-2003 demonstrated:

that airborne transmission was the most likely mechanism explaining the spatial pattern of infections... there is every reason to expect that SARS-CoV-2 behaves similarly, and that transmission via airborne microdroplets is an important pathway.<sup>250</sup>

According to Michael Osterholm, an infectious diseases expert at the University of Minnesota, "The W.H.O. has been out of step with most of the world on the issue of droplets and aerosols."<sup>251</sup> Prof. Gostin, cited elsewhere in this report, agreed, saying, "WHO's credibility is being undermined through a steady drip-drip of confusing messages, including asymptomatic spread, the use of masks, and now airborne transmission."<sup>252</sup>

It is absolutely understandable for the WHO to dutifully examine new research as it is published and to ensure the technical advice it is providing to Member States is accurate. Undoubtedly, this task is more difficult when occurring in real time, in the midst of a global pandemic. However, the WHO is tasked with providing the best possible scientific data and recommendations to the world. **As the 130+ day delay in their recommending the widespread use of masks shows, that is another duty the WHO has failed to fulfill.**

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<sup>247</sup> "Q&A: How Is COVID-19 Transmitted?" *World Health Organization*, [www.who.int/news-room/q-a-detail/q-a-how-is-covid-19-transmitted](http://www.who.int/news-room/q-a-detail/q-a-how-is-covid-19-transmitted).

<sup>248</sup> Lidia Morawska, Donald K Milton, It is Time to Address Airborne Transmission of COVID-19, *Clinical Infectious Diseases*, , ciaa939, <https://doi.org/10.1093/cid/ciaa939>

<sup>249</sup> *Ibid.*

<sup>250</sup> *Ibid.*

<sup>251</sup> Mandavilli.

<sup>252</sup> Heidt, Amanda. "Scientists Urge Consideration of Airborne SARS-CoV-2 Transmission." *The Scientist Magazine*, 6 July 2020, [www.the-scientist.com/news-opinion/scientists-urge-consideration-of-airborne-sars-cov-2-transmission-67702](http://www.the-scientist.com/news-opinion/scientists-urge-consideration-of-airborne-sars-cov-2-transmission-67702).

### Deference to the CCP and Their Cover-up

From the early stages of the outbreak, the WHO, under Director-General Tedros' leadership, parroted and upheld as inviolable truth, statements from the CCP. An examination of their public statements, including the praise heaped on the CCP's handling of the pandemic, reveal a disturbing willingness to ignore science and alternative credible sources. While we do not know everything that happened at the WHO, we do know that Director-General Tedros actively engaged in an effort to defend the CCP's leadership from criticism, negatively impacting the world's understanding of the virus and hampering the global response effort.

The WHO has repeatedly published incomplete information that has been exploited by the CCP to further their propaganda and disinformation efforts. The December 31<sup>st</sup>, 2019 entry in the WHO's official timeline of the COVID-19 pandemic reads: "Wuhan Municipal Health Commission, China, reported a cluster of cases of pneumonia in Wuhan, Hubei Province."<sup>253</sup> The press release issued by the WHO on January 5, 2020 states that "the WHO China Country Office was informed of cases of pneumonia of unknown etiology (unknown cause) detected in Wuhan City, Hubei Province of China."<sup>254</sup> **Conveniently, it leaves out the fact that the WHO China Country Office was "informed" by the WHO headquarters in Geneva – not PRC health authorities.**

These were not isolated incidents in the early days of the pandemic. Neither document has been updated to reflect what we now know is true – the PRC did not notify the WHO about the outbreak. Director-General Tedros continues to make public comments that defend the CCP's handling of the outbreak and allude to the CCP as the source that notified the WHO. During an April 20, 2020 press conference, Dr. Ryan and Director-General Tedros were asked about Taiwan's email notification. Dr. Ryan, as quoted earlier in this report, reveals that the WHO learned about the outbreak not from PRC authorities, but from a post on a U.S.-based website. When the moderator called on another reporter, Director-General Tedros interjected:

Can I? I think Mike answered it very well but it [sic] just wanted to summarise. In its email on 31st December one thing that has to be clear is the first email was not from Taiwan. Many other countries already were asking for clarification. The first report came from Wuhan, from China itself.... **So the report first came from China - that's fact number one** [emphasis added] - from Wuhan itself.<sup>255</sup>

While it is technically true that the first reports of the virus originated in Wuhan, WHO headquarters staff initially discovered these reports on a U.S.-based early warning website. Director-General Tedros' comments seem to suggest that Wuhan or the PRC informed the WHO of the outbreak, which is untrue. These comments are not an isolated incident, and when

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<sup>253</sup> "WHO Timeline - COVID-19." *World Health Organization*, [www.who.int/news-room/detail/27-04-2020-who-timeline---covid-19](http://www.who.int/news-room/detail/27-04-2020-who-timeline---covid-19).

<sup>254</sup> "Pneumonia of Unknown Cause – China." *World Health Organization*, World Health Organization, 5 Jan. 2020, [www.who.int/csr/don/05-january-2020-pneumonia-of-unknown-cause-china/en/](http://www.who.int/csr/don/05-january-2020-pneumonia-of-unknown-cause-china/en/).

<sup>255</sup> Remarks by Dr. Tedros Adhanom Ghebreyesus, Director-General of the WHO, at "COVID-19 Virtual Press Conference," April 20, 2020, <https://www.who.int/docs/default-source/coronaviruse/transcripts/who-audio-emergencies-coronavirus-press-conference-20apr2020.pdf>.

combined with the examples above, they illustrate a sustained effort by the WHO's leadership to use language that is technically not false but misleading to outside audiences.

The CCP has exploited this lack of transparency to push their propaganda, disinformation, and revisionist history. One example, published by the CCP controlled China Daily, asserts that the CCP "reported [the outbreak] in a timely fashion to the World Health Organization."<sup>256</sup> Multiple news sources have repeated this claim:

"The first cases were reported to the World Health Organization on December 31..."<sup>257</sup> (CNN, published January 23, 2020).

Dec. 31: China tells the World Health Organization's China office about the cases of an unknown illness.<sup>258</sup> (Axios, published March 18, 2020)

December 31, 2019 - Chinese Health officials inform the WHO about a cluster of 41 patients with a mysterious pneumonia.<sup>259</sup> (Business Insider, published May 22, 2020).

On December 31, 2019, Chinese authorities contacted the Beijing office of the World Health Organization and informed them about an outbreak of pneumonia of unknown origin observed in late December.<sup>260</sup> (In-Depth News, published May 25, 2020)

On December 31 last year, China alerted the WHO to several cases of unusual pneumonia in Wuhan, a city of 11 million people.<sup>261</sup> (Al Jazeera, published June 2, 2020)

Several of these articles cite various WHO publications as proof. A lack of transparency in the information the WHO has made public, combined with Director-General Tedros' public comments praising the CCP, has led to multiple news sources inaccurately stating as fact that the PRC notified the WHO about the outbreak. **The WHO has been complicit in the spread and normalization of CCP propaganda and disinformation.**

On June 29<sup>th</sup>, seventeen days after the publication of the interim version of this report, the WHO updated their official timeline for the COVID-19 pandemic. This update addressed several

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<sup>256</sup> "Experts Say It's Groundless to Hold China Accountable for COVID-19." *China Daily*, [www.chinadaily.com.cn/a/202006/04/WS5ed832f8a310a8b24115ab5a.html](http://www.chinadaily.com.cn/a/202006/04/WS5ed832f8a310a8b24115ab5a.html).

<sup>257</sup> Cohen, Elizabeth. "CDC Advisers Concerned about Lack of Basic Information about New Wuhan Coronavirus." *CNN*, 23 Jan. 2020, [www.cnn.com/2020/01/23/health/wuhan-coronavirus-cdc-advisers/index.html](http://www.cnn.com/2020/01/23/health/wuhan-coronavirus-cdc-advisers/index.html).

<sup>258</sup> Allen-Ebrahimian

<sup>259</sup> Holly Secon, Aylin Woodward. "A Comprehensive Timeline of the New Coronavirus Pandemic, from China's First Case to the Present." *Business Insider*, 22 May 2020, [www.businessinsider.com/coronavirus-pandemic-timeline-history-major-events-2020-3](http://www.businessinsider.com/coronavirus-pandemic-timeline-history-major-events-2020-3).

<sup>260</sup> "COVID-19: How the U.S. Ignored the Chinese and WHO Warnings." *InDepthNews*, 25 May 2020, [www.indepthnews.net/index.php/opinion/3566-covid-19-how-the-u-s-ignored-the-chinese-and-who-warnings](http://www.indepthnews.net/index.php/opinion/3566-covid-19-how-the-u-s-ignored-the-chinese-and-who-warnings).

<sup>261</sup> "Timeline: How the New Coronavirus Spread." *Al Jazeera*, 2 June 2020, [www.aljazeera.com/news/2020/01/timeline-china-coronavirus-spread-200126061554884.html](http://www.aljazeera.com/news/2020/01/timeline-china-coronavirus-spread-200126061554884.html).

inaccuracies in their previous timeline, including how the WHO first became aware of the outbreak in Wuhan. The corrected entry for December 31, 2019 now reads:

WHO's Country Office in the People's Republic of China picked up a media statement by the Wuhan Municipal Health Commission from their website on cases of 'viral pneumonia' in Wuhan, People's Republic of China.

The Country Office notified the International Health Regulations (IHR) focal point in the WHO Western Pacific Regional Office about the Wuhan Municipal Health Commission media statement of the cases and provided a translation of it.

WHO's Epidemic Intelligence from Open Sources (EIOS) platform also picked up a [media report](#) on ProMED (a programme of the International Society for Infectious Diseases) about the same cluster of cases of "pneumonia of unknown cause", in Wuhan.

Several health authorities from around the world contacted WHO seeking additional information<sup>262</sup>

Interestingly, this new timeline was issued six days after the CCP used PRC state media to respond to the interim version of this report. After fielding a question from China National Radio, Zhao Lijian, referenced above for spreading disinformation regarding the source of COVID-19 via Twitter, laid out a new timeline for the CCP's response to COVID-19. In his comments, he conceded that the CCP engagement with the WHO began on January 3<sup>rd</sup>.<sup>263</sup>

This transparency was unfortunately short lived. In early July, Zhao reverted back to the previous claim, stating, "On December 31, 2019, the Wuhan Municipal Health Commission released a statement on the situation of pneumonia in the city on its official website. China reported to the WHO at the earliest time possible. This fact cannot be clearer."<sup>264</sup> As discussed elsewhere, Article 6 of the IHR requires notification through National IHR Focal Point; a local hospital releasing a statement online does not fulfil that requirement. Zhao's comments are demonstrably untrue and another example of CCP misinformation.

There was public reporting, credible warnings from outside sources, and reports from WHO teams on the ground that differed from the CCP's talking points. According to outside experts, the WHO's public statements were "heavily influenced by the Chinese Communist Party."<sup>265</sup> **By repeating as truth statements that were misleading, if not lies, the WHO negatively impacted the global response.** Lawrence Gostin, a professor of global health at Georgetown

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<sup>262</sup> "Timeline of WHO's Response to COVID-19." *World Health Organization*, 29 June 2020, [www.who.int/news-room/detail/29-06-2020-covidtimeline](http://www.who.int/news-room/detail/29-06-2020-covidtimeline).

<sup>263</sup> "Foreign Ministry Spokesperson Zhao Lijian's Regular Press Conference on June 23, 2020." *Ministry of Foreign Affairs of the People's Republic of China*, 23 Jan. 2020, [www.fmprc.gov.cn/mfa\\_eng/xwfw\\_665399/s2510\\_665401/2511\\_665403/t1791668.shtml](http://www.fmprc.gov.cn/mfa_eng/xwfw_665399/s2510_665401/2511_665403/t1791668.shtml).

<sup>264</sup> "Foreign Ministry Spokesperson Zhao Lijian's Regular Press Conference on July 6, 2020." *Ministry of Foreign Affairs of the People's Republic of China*, 6 July 2020, [https://www.fmprc.gov.cn/mfa\\_eng/xwfw\\_665399/s2510\\_665401/t1795337.shtml](https://www.fmprc.gov.cn/mfa_eng/xwfw_665399/s2510_665401/t1795337.shtml)

<sup>265</sup> Feldwisch-Drentrup, Hinnerk. "How WHO Became China's Coronavirus Accomplice." *Foreign Policy*, 2 Apr. 2020, <https://foreignpolicy.com/2020/04/02/china-coronavirus-who-health-soft-power/>

University who consults with the WHO, stated that he and other global health experts were “deceived”<sup>266</sup> by the statements made by the CCP and WHO.<sup>267</sup>

Behind closed doors in Geneva, the WHO knew the PRC was not fulfilling its duties under the IHR. According to the *Associated Press*, who reviewed internal WHO documents, interviews, and recordings, the PRC “stalled for at least two weeks... on providing the WHO with detailed data on patients and cases.”<sup>268</sup> The reporting includes several quotes attributed to senior WHO officials critical of the CCP’s behavior:

“We’re going on very minimal information. It’s clearly not enough for you to do proper planning.” – Maria Van Kerkhove, WHO’s technical lead for COVID-19.<sup>269</sup>

“We’re currently at the stage where yes, they’re giving it to us 15 minutes before it appears on [China Central Television],” Dr. Gauden Galea, WHO Representative to China.<sup>270</sup>

“This is exactly the same scenario [as SARS], endlessly trying to get updates from China about what was going on. WHO barely got out of that one with its neck intact given the issues that arose around transparency in southern China.” – Dr. Michael Ryan, Executive Director of the WHO’s Health Emergencies Program.<sup>271</sup>

According to the *Associated Press*, the public defense of the CCP was due to a concern within the WHO that applying pressure for the information the PRC was legally required to provide could result in a loss of access and potential danger for Chinese scientists in the PRC. Despite Director-General Tedros’ praise of the CCP’s “transparency,” Dr. Ryan and others knew the CCP’s behavior was anything but – in apparent reference to the 2018 Ebola outbreak in the Democratic Republic of the Congo, Dr. Ryan allegedly stated, “This would not happen in Congo and did not happen in Congo and other places.”<sup>272</sup>

Unfortunately, it is clear that Director-General Tedros was not prepared for this pandemic and did not base his decisions on the available scientific evidence. A further investigation into the full extent of the CCP’s influence at the WHO and the WHO’s tragic mishandling is fully warranted, but also fully challenged by the lack of information provided by the WHO and CCP. A key example of this surrounds the confirmation that SARS-CoV-2 was spreading by human-to-human transmission. On January 13<sup>th</sup>, a news release by the WHO regarding the confirmation of a COVID-19 case in Thailand read in part, “there has been no suggestion of human-to-human

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<sup>266</sup> Rauhala, Emily. “Chinese Officials Note Serious Problems in Coronavirus Response. The World Health Organization Keeps Praising Them.” *The Washington Post*, 9 Feb. 2020, [www.washingtonpost.com/world/asia\\_pacific/chinese-officials-note-serious-problems-in-coronavirus-response-the-world-health-organization-keeps-praising-them/2020/02/08/b663dd7c-4834-11ea-91ab-ce439aa5c7c1\\_story.html](https://www.washingtonpost.com/world/asia_pacific/chinese-officials-note-serious-problems-in-coronavirus-response-the-world-health-organization-keeps-praising-them/2020/02/08/b663dd7c-4834-11ea-91ab-ce439aa5c7c1_story.html).

<sup>267</sup> *Ibid.*

<sup>268</sup> “China Delayed Releasing Coronavirus Info, Frustrating WHO.” *Associated Press*, 3 June 2020, <https://apnews.com/3c061794970661042b18d5aeaad9fae>

<sup>269</sup> *Ibid.*

<sup>270</sup> *Ibid.*

<sup>271</sup> *Ibid.*

<sup>272</sup> *Ibid.*



transmission.”<sup>273</sup> On January 14<sup>th</sup>, the WHO issued a “disease outbreak news” release that stated, “based on the available information, there is no clear evidence of human-to-human transmission.”<sup>274</sup> On January 21<sup>st</sup>, China’s National Health Commission finally conceded that human-to-human transmission was occurring. The next day, the WHO published a report from its China field office that confirmed that human-to-human transmission was occurring.<sup>275</sup>

Despite repeated claims by the WHO before January 22<sup>nd</sup> that there was no “suggestion” or evidence of human-to human transmission, on April 13<sup>th</sup>, WHO’s COVID-19 Technical Lead, Dr. Maria Van Kerkhove, said:

Right from the start, from the first notification we received on the 31<sup>st</sup> of December, given that this was a cluster of pneumonia — I’m a MERS specialist, so my background is in coronaviruses and influenza — so immediately thought, given that this is a respiratory pathogen, that of course there may be human-to-human transmission.<sup>276</sup>

It is hard to reconcile the WHO’s own Technical Lead saying that on December 31<sup>st</sup> she knew that “of course” human-to-human transmission could be occurring with the WHO’s January 13<sup>th</sup> statement that “there has been no suggestion of human-to-human transmission.” **Either the WHO willfully ignored their experts, or they deferred continually to CCP pressure.**

This deference continued after the declaration of a PHEIC. After the United States instituted travel restrictions on January 31<sup>st</sup>, Director-General Tedros said travel restrictions “unnecessarily interfere with international travel and trade.”<sup>277</sup> This is despite the millions of Chinese citizens traveling abroad for the Spring Festival<sup>278</sup> and Director-General Tedros’ repeated praise of the CCP’s response to COVID-19, which included travel restrictions, both internationally and domestically. As China continued to report small numbers of new cases, the WHO delayed declaring COVID-19 a pandemic until March 11<sup>th</sup>, despite the virus spreading globally weeks before.<sup>279</sup>

Those who seek to defend the WHO’s handling of the response argue that had the WHO been more aggressive in seeking transparency from the CCP, it would have exacerbated efforts to hide

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<sup>273</sup> “Thailand Responding to the Novel Coronavirus.” *World Health Organization*, 13 Jan. 2020, [www.who.int/thailand/news/detail/13-01-2020-thailand-responding-to-the-novel-coronavirus](http://www.who.int/thailand/news/detail/13-01-2020-thailand-responding-to-the-novel-coronavirus).

<sup>274</sup> “Novel Coronavirus – Thailand (Ex-China).” *World Health Organization*, 16 Jan. 2020, [www.who.int/csr/don/14-january-2020-novel-coronavirus-thailand-ex-china/en/](http://www.who.int/csr/don/14-january-2020-novel-coronavirus-thailand-ex-china/en/).

<sup>275</sup> “Mission Summary: WHO Field Visit to Wuhan, China 20-21 January 2020.” *World Health Organization*, 22 Jan. 2020, [www.who.int/china/news/detail/22-01-2020-field-visit-wuhan-china-jan-2020](http://www.who.int/china/news/detail/22-01-2020-field-visit-wuhan-china-jan-2020).

<sup>276</sup> “Live from WHO Headquarters - coronavirus - COVID-19 daily press briefing 13 April 2020.” *YouTube*, uploaded by the World Health Organization, 13 Apr. 2020, <https://www.youtube.com/watch?v=NCy-qvcDDI4>

<sup>277</sup> Nebehay, Stephanie. “WHO Chief Says Widespread Travel Bans Not Needed to Beat China Virus.” *Reuters*, 3 Feb. 2020, [www.reuters.com/article/us-china-health-who/who-chief-says-widespread-travel-bans-not-needed-to-beat-china-virus-idUSKBN1ZX1H3](http://www.reuters.com/article/us-china-health-who/who-chief-says-widespread-travel-bans-not-needed-to-beat-china-virus-idUSKBN1ZX1H3).

<sup>278</sup> “China Will Rack Up Three Billion Trips During World’s Biggest Human Migration.” *Bloomberg*, 20 Jan. 2020, [www.bloomberg.com/news/articles/2020-01-20/china-readies-for-world-s-biggest-human-migration-quicktake](http://www.bloomberg.com/news/articles/2020-01-20/china-readies-for-world-s-biggest-human-migration-quicktake).

<sup>279</sup> Feldwisch-Drentrup, Hinnerk. “How WHO Became China’s Coronavirus Accomplice.” *Foreign Policy*, 2 Apr. 2020, <https://foreignpolicy.com/2020/04/02/china-coronavirus-who-health-soft-power/>



information and impeded the global response.<sup>280</sup> Unfortunately, it has become clear that Director-General Tedros' choice to follow the path of deference failed to achieve its goals. As we now know, senior leaders within WHO knew that the PRC was failing to provide the information required by the IHR and so needed for the development of a global response. However, the CCP's abject failures to abide by its international obligations do not excuse the failures of the WHO leadership to fulfil the organization's mandate to investigate and respond to global health emergencies. The answer is not to excuse the WHO's failures, but to hold a guilty CCP accountable.

## **VI. OUTSTANDING QUESTIONS REGARDING SARS-CoV-2 AND COVID-19**

Despite the large amount of information suppressed by the CCP that has now become public, there remains a litany of questions to be answered, not only by the CCP but by the WHO as well.

### Questions for the CCP

The CCP has refused to allow outside experts to visit the Wuhan Institute of Virology and has refused to allow the WIV to send virus samples to the WHO or its Member States. Outstanding questions regarding the CCP's handling out of the outbreak include:

- Why did the CCP not notify the WHO of the outbreak in Wuhan as required by Article 6 of the IHR?
- Why did the CCP not notify the WHO that Chinese researchers had identified the virus as a coronavirus genetically similar to SARS-CoV?
- Why did the CCP delay, by 13 days, the announcement that it had identified the virus responsible for the outbreak and that it was a novel coronavirus genetically similar to SARS-CoV?
- Why did the CCP delay releasing the genetic sequence of the virus by ten days?
- Why did the CCP require laboratories and research sites across China to destroy their samples of the virus?
- Has the CCP identified patient zero?
- Were samples gathered from the Huanan market prior to it being sanitized?
- If so, why were those samples not shared with the WHO and the international community?
- Why has the CCP refused to share primary isolates of SARS-CoV-2 with the WHO and the international community?
- Why did the CCP intervene and prohibit the WIV from transferring samples to the lab at the University of Texas medical branch in Galveston?
- Was gain-of-function research being conducted on wild coronavirus strains at the WIV immediately prior to the outbreak?

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<sup>280</sup> Rauhala, Emily. "Chinese Officials Note Serious Problems in Coronavirus Response. The World Health Organization Keeps Praising Them." *The Washington Post*, 9 Feb. 2020, [www.washingtonpost.com/world/asia\\_pacific/chinese-officials-note-serious-problems-in-coronavirus-response-the-world-health-organization-keeps-praising-them/2020/02/08/b663dd7c-4834-11ea-91ab-ce439aa5c7c1\\_story.html](https://www.washingtonpost.com/world/asia_pacific/chinese-officials-note-serious-problems-in-coronavirus-response-the-world-health-organization-keeps-praising-them/2020/02/08/b663dd7c-4834-11ea-91ab-ce439aa5c7c1_story.html).

- Why did the CCP impose restrictions on the publication of academic research on the origins of SARS-CoV-2?
- What is the current status of Chen Quishi and Fang Bin, the missing journalists?

#### Questions for the WHO

Similarly, there are multiple outstanding questions for Director-General Tedros and the WHO:

- When did the WHO first learn that the outbreak in Wuhan was caused by a coronavirus similar to the virus that caused the 2003 SARS pandemic?
- Did the WHO seek verification of Taiwan's reports of SARS cases and ongoing human-to-human transmission in accordance with Article 9? If not, why not?
- If so, did the Government of the People's Republic of China (PRC) comply?
- If the PRC did not comply, why did the WHO not transmit that information to Member States in accordance with Article 10?
- Why did the WHO not transmit the information provided by Taiwan to WHO Member States in accordance with Article 11?
- Has the WHO received similar emails from Taiwan in the past? If so, how were they handled?
- Did the WHO investigate the warnings, in accordance with Article 9, from Dr. Ho, a member of the WHO Collaborating Centre for Infection Disease Epidemiology and Control at the University of Hong Kong, regarding the high likelihood that human-to-human transmission was already occurring? If not, why not?
- If so, did the Government of the PRC comply?
- Does the WHO consider viral isolates and genetic sequencing data "public health information" under Article 6?
- Has the WHO requested live virus samples from the PRC? If so, has the PRC provided said samples?
- When did the WHO become aware of reports that the PRC was suppressing public health information in violation of Articles 6 and 7?
- After becoming aware, did Director-General Tedros request an explanation from the CCP?
- Who were the "select team members" of the WHO-China Joint Mission who were allowed access to Wuhan?
- What actions has the WHO taken in response to the PRC's violations of the 2005 IHR?
- Has the WHO ever taken action against a State Party in response to violations of the IHR?
- Was the WHO told, or made to feel, that the WHO's access to data, information, and access to potential sites in Wuhan, China was contingent on cooperating with the CCP's narrative of events?

Each of these questions represents information that we need to better understand the source and cause of the COVID-19 global pandemic. It is our hope that in the coming weeks and months, the world will learn the answers to these questions. To that end, on May 8, 2020, we transmitted the above questions to the WHO. On July 21<sup>st</sup>, Ranking Member McCaul received a

response from Director-General Tedros, a copy of which is included in the Appendix. **Unfortunately, of the eighteen questions sent to the WHO, only one (regarding human-to-human transmission) was referenced in the thirteen-page response letter.** The other questions regarding the PRC's behavior, the WHO requesting samples from the PRC, the warnings issued by Taiwan and Hong Kong, and the WHO handling of IHR violations were simply ignored.

## VII. RECOMMENDATIONS

The full impact of the COVID-19 global pandemic will not be known for many years. In the coming months we will struggle with questions regarding strains on our healthcare systems, peak caseloads, subsequent waves of new infections, and the impact of secondary and tertiary effects on the domestic and global economies in addition to our national security. It is important the international community take steps now to restore legitimacy to the WHO so the rest of the response will not be tainted by their prior missteps and we are best prepared for the next dangerous outbreak.

The United States must take action within the international community aimed at supporting accountability, transparency, and reforms to the systems and processes that enabled the CCP's cover-up and the WHO's failures. To this end, we provide four recommendations: new leadership at the WHO, Taiwan's re-admittance to the WHO as an observer, United States engagement in an international investigation with likeminded WHO Member States regarding the early stages of COVID-19, and concrete reforms to the International Health Regulations.

### New Leadership at WHO

It is clear Director-General Tedros seriously erred in his handling of the COVID-19 pandemic. Coupled with a concerning history of covering up outbreaks of cholera in his home country of Ethiopia and repeated delays in declaring a PHEIC in response to the Kivu Ebola epidemic, we believe there is an established pattern of poor decision-making and political deference that has weakened the ability of the WHO to fulfill its mandate. We do not expect, nor require, the head of the WHO to be perfect. However, Director-General Tedros has repeatedly defended his decisions, responded to Taiwan's criticism by accusing their government of supporting racists,<sup>281</sup> and praised the CCP's deplorable actions in response to the outbreak.

Defenders of Director-General Tedros argue that it would have been counterproductive to push back against the CCP. They argue that "diplomatic flattery is the price of ensuring Chinese cooperation."<sup>282</sup> Others say that the Director-General "cannot afford to antagonize the notoriously touchy Chinese government."<sup>283</sup> These statements rest on the claim that if Director-

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<sup>281</sup> "Coronavirus: WHO Chief and Taiwan in Row over 'Racist' Comments." *BBC News*, 9 Apr. 2020, [www.bbc.com/news/world-asia-52230833](http://www.bbc.com/news/world-asia-52230833).

<sup>282</sup> Borger, Julian. "Caught in a Superpower Struggle: the inside Story of the WHO's Response to Coronavirus." *The Guardian*, 18 Apr. 2020, [www.theguardian.com/world/2020/apr/18/caught-in-a-superpower-struggle-the-inside-story-of-the-whos-response-to-coronavirus](http://www.theguardian.com/world/2020/apr/18/caught-in-a-superpower-struggle-the-inside-story-of-the-whos-response-to-coronavirus).

<sup>283</sup> Griffiths, James. "WHO's Relationship with China under Scrutiny Due to Coronavirus Crisis." *CNN*, 17 Feb. 2020, [www.cnn.com/2020/02/14/asia/coronavirus-who-china-intl-hnk/index.html](http://www.cnn.com/2020/02/14/asia/coronavirus-who-china-intl-hnk/index.html).

General Tedros had been more aggressive in questioning the claims coming from the CCP, then the CCP would have shared less information or delayed WHO access to the country.

However, such defenses ring hollow when the world has seen the impact of an independent Director-General of the WHO. In April 2003, two months after the CCP finally reported the outbreak of SARS to the WHO, and in the midst of the WHO response, then-Director-General Gro Harlem Brundtland publicly commented on the CCP's mishandling of the outbreak. Director-General Brundtland criticized the failure of the CCP to report the outbreak and their lack of coordination with the international community.<sup>284</sup> Under her leadership the WHO declared a travel guidance for the first time in 55 years in order to stem the spread of SARS.<sup>285</sup> Almost prophetically, Director-General Brundtland stated:

When I say that it would have been better, it means that I'm saying as the director general of the World Health Organisation: next time something strange and new comes anywhere in the world let us come in as quickly as possible.<sup>286</sup>

Tragically, the CCP failed to heed her guidance. Director-General Brundtland's handling of the 2003 SARS pandemic is a case study for the importance of a Director-General who speaks truth to power and publicly challenges Member States when they fail to uphold their obligations to the international community. Instead, Director-General Tedros has chosen to defend and heap praise on a Member State who has continuously fed the WHO lies and misinformation. As stated earlier in this report, we now know Director-General Tedros and other senior leaders within the WHO knew that the PRC was withholding information and failing to abide by the IHR despite the deference of the WHO. They knew their policy of appeasement was failing yet chose to double down on it.

As such, we have lost faith in the ability of Director-General Tedros to lead the WHO. Having presided over two flawed PHEIC responses and prevented Taiwan from engaging with the WHO, it is clear that Director-General Tedros prioritizes matters other than the on-the-ground impact of COVID-19. The WHO's constitution requires it to provide "appropriate technical assistance,"<sup>287</sup> not political coverage for mistakes and cover-ups carried out by Member States. As Director-General, the responsibility of declaring a PHEIC, and indeed, the impact of choosing not to declare one, rests on his shoulders. In order to restore the faith of WHO Member States and return the WHO to its mandate of providing accurate, technical advice, **Director-General Tedros should accept responsibility for his detrimental impact on the COVID-19 response and resign.** The health of the world cannot afford incompetence and poor management.

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<sup>284</sup> "Health | China under Fire for Virus Spread." *BBC News*, 6 Apr. 2003, [www.news.bbc.co.uk/2/hi/health/2922993.stm](http://www.news.bbc.co.uk/2/hi/health/2922993.stm)

<sup>285</sup> Collins, Michael. "The WHO and China: Dereliction of Duty." *Council on Foreign Relations*, 27 Feb. 2020, [www.cfr.org/blog/who-and-china-dereliction-duty](http://www.cfr.org/blog/who-and-china-dereliction-duty).

<sup>286</sup> "Health | China under Fire for Virus Spread." *BBC News*, 6 Apr. 2003, [www.news.bbc.co.uk/2/hi/health/2922993.stm](http://www.news.bbc.co.uk/2/hi/health/2922993.stm)

<sup>287</sup> "Constitution." *World Health Organization*, [www.who.int/about/who-we-are/constitution](http://www.who.int/about/who-we-are/constitution).

### Re-admittance of Taiwan to the WHO under Observer Status

In the early 1970s, by a vote of the World Health Assembly, Taiwan was removed from the World Health Organization and replaced with the PRC. After years of Taiwan petitioning to be readmitted to the WHO, the PRC and WHO signed the 2005 Memorandum of Understanding between the WHO Secretariat and the PRC. While the text remains secret, it is understood that the agreement severely limits contact between the WHO and Taiwan. Taiwan's interactions with the WHO were so restricted that representatives from Taiwan were only allowed to attend 21 of the approximately 1,000 WHO technical meetings held between 2005 and 2008.<sup>288</sup>

In 2009, after years of diplomatic negotiation, the Department of Health in Taiwan received an invitation from then WHO Director-General Margaret Chan to attend a meeting of the WHA under the name "Chinese Taipei." The invitation, granted under the authority of the Director-General of the WHO,<sup>289</sup> was extended each year until 2016. After Taiwan democratically elected President Tsai Ing-wen, seen as more critical of the PRC than her predecessor, the invitations stopped.<sup>290</sup> Director-General Tedros, after being elected in May 2017, was quick to reassure the CCP that he would support their position. On May 26<sup>th</sup>, three days after he was elected, Director-General Tedros spoke to Xinhua, a PRC state-run press agency, and pledged to "abide by the one-China principle."<sup>291</sup> The "one-China principle" is the CCP's own view that it holds sovereignty over Taiwan, which is not UN policy, the consensus view of UN member states, nor the policy of the United States.

The importance of Taiwan's inclusion at the WHO is an issue that has longstanding bipartisan support in Congress. During the 116<sup>th</sup> Congress, both chambers have passed several pieces of legislation supporting Taiwan's engagement with the WHO. The House of Representatives passed H.R.353, a bill supporting Taiwan's participation in the WHO, unanimously. The Senate followed suit, unanimously approving S.249, a similar bill. A third piece of legislation, S. 1678, was signed into law by President Trump earlier this year, establishing as the policy of the United States support for the inclusion of Taiwan as an observer within appropriate international organizations.

Despite Taiwan's early identification of the outbreak, warning of human-to-human transmission, and success in battling COVID-19, Director-General Tedros has remained committed to the CCP's position and continues to refuse to invite Taiwan to participate in the WHA. Had Taiwan been a member of the WHA, or allowed to attend under Observer Status, it is highly likely their warnings regarding human-to-human transmission would have been transmitted to other countries instead of censored by the WHO. As was the case under the

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<sup>288</sup> Glazier, E., et al. "The Limits of Global Health Diplomacy: Taiwan's Observer Status at the World Health Assembly." *Globalization and Health*, BioMed Central, 1 Oct. 2014, <https://globalizationandhealth.biomedcentral.com/articles/10.1186/s12992-014-0071-y>.

<sup>289</sup> *Ibid.*

<sup>290</sup> Ching, Nike. "US Supports Taiwan's World Health Assembly Observer Status ." *Voice of America*, 30 Mar. 2020, [www.voanews.com/science-health/coronavirus-outbreak/us-supports-taiwans-world-health-assembly-observer-status](http://www.voanews.com/science-health/coronavirus-outbreak/us-supports-taiwans-world-health-assembly-observer-status).

<sup>291</sup> "WHO's Newly Elected Chief Reaffirms One-China Principle." *Xinhua*, 26 May 2017, [www.xinhuanet.com/english/2017-05/26/c\\_136318462.htm](http://www.xinhuanet.com/english/2017-05/26/c_136318462.htm).



previous Director-General, it is completely within Director-General Tedros' power to invite Taiwan to participate in the WHA. He has simply chosen to allow the PRC to make this decision for him, yielding his authority in deference to the CCP. **As such, we call upon the Director-General who replaces Director-General Tedros to invite Taiwan to participate in the WHO, in order to ensure that future warnings about potential health emergencies do not go unheeded.**

#### International Investigation

The United States should engage with likeminded WHO Member States and Taiwan on an international investigation of the CCP's cover-up of the early stages of the pandemic and the WHO's failure to fulfill its obligations under the IHR. Such an investigation should seek to establish an even more definitive account of the origins of SARS-CoV-2, its appearance in humans, efforts by the CCP to conceal relevant scientific and health information about the outbreak, the effect of the CCP's cover-up on the actions of the WHO, the impact of the WHO's parroting of CCP propaganda, and the influence of the CCP's cover-up on the global response.

Fortunately, we are not alone in this proposal. The Governments of Australia, Japan, New Zealand, Sweden, and Taiwan, in addition to the European Commission, have publicly expressed their support for an independent investigation of the pandemic. On May 19, the World Health Assembly unanimously adopted a resolution cosponsored by more than 130 countries calling for an independent and comprehensive evaluation of the WHO's handling of the COVID-19 pandemic.<sup>292</sup> The resolution, despite not mentioning the PRC's cover-up or failure to abide by the IHR, is a positive step towards developing a comprehensive understanding of the pandemic. However, while this investigation is important, it does not address the issue of true accountability regarding the PRC's clear violations of international law.

On July 6<sup>th</sup>, the United States submitted formal notice of its intent to withdraw from the WHO, effective July 6, 2021. We share the frustrations of President Trump, Secretary of State Pompeo, and National Security Adviser O'Brien with the WHO's mishandling of the COVID-19 pandemic. NSA O'Brien has publicly stated that the Administration would consider remaining a part of the WHO if the organization instituted the necessary reforms to ensure its independence.<sup>293</sup> We agree it is vital for the WHO to restore its independent nature as a body that provides technical advice free from political considerations. The on-going pandemic has revealed deep flaws within WHO processes that can only be addressed by serious, and extensive, reforms. **While the WHO failed to abide by the IHR, uphold its mandate, and fulfil its obligations to Member States, we do not believe the withdrawal of the United States or the establishment of a competing international organization is the best path forward. As such, we call on the WHO to fix the deficiencies outlined by the Administration, adopt the recommendations of this report through internal action where possible, and make preparations for**

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<sup>292</sup> "Historic Health Assembly Ends with Global Commitment to COVID-19 Response." *World Health Organization*, 19 May 2020, [www.who.int/news-room/detail/19-05-2020-historic-health-assembly-ends-with-global-commitment-to-covid-19-response](http://www.who.int/news-room/detail/19-05-2020-historic-health-assembly-ends-with-global-commitment-to-covid-19-response).

<sup>293</sup> Semones, Evan. "Trump's National Security Adviser Attacks World Health Organization." *POLITICO*, 31 May 2020, [www.politico.com/news/2020/05/31/trump-obrien-world-health-organization-corrupt-292059](http://www.politico.com/news/2020/05/31/trump-obrien-world-health-organization-corrupt-292059).



**improvements and reforms that need to be ratified by the World Health Assembly at its next meeting or emergency session.** By remaining part of a WHO that is ready for change, the United States can drive forward the necessary reforms of the International Health Regulations and the WHO.

#### IHR Reforms

In the wake of the 2003 SARS pandemic, the United States was involved in efforts to reform the International Health Regulations. Negotiations amongst WHO Member States resulted in the 2005 IHR, which entered into effect in 2007. While the 2005 IHR included several important reforms, the COVID-19 pandemic has revealed additional flaws and the need to refine previous reforms. We recommend the President and Secretary of State use the voice, vote, and influence of the United States to seek additional IHR reforms, including around the information Member States are required to provide, the WHO's obligations to investigate unofficial reports concerning health events and notify Member States, and the process for declaring a PHEIC.

Article 6 of the IHR requires Member States to provide certain relevant public health information to the WHO, including "laboratory results,"<sup>294</sup> among other things. As discussed earlier in the report, the PRC failed to transmit the SARS-CoV-2 genetic sequencing data to the WHO for 10 days, and to date has not provided viral isolates or other biological samples to the WHO. Article 6 should be amended to include, by reference, genetic sequencing data and biological samples in the list of public health information Member States are required to provide to the WHO. This will ensure that Member States cannot exploit loopholes they perceive to hide or suppress vital public health information.

Under Article 9 of the IHR, the WHO has a "mandate"<sup>295</sup> to investigate and seek verification of unofficial reports concerning health events with "potential international implication."<sup>296</sup> In several instances discussed in this report, it appears that the WHO failed to do so. The United States Government should consider how to improve and clarify the WHO's responsibilities to investigate reports from non-Member States under Article 9. One possible option would be requiring the WHO to disclose the results of their investigations once complete. Alternatively, the IHR could be modified to empower Member States to refer third party or unofficial reports of activity within a different Member State to the WHO for investigation.

Article 11 of the IHR regulates how the WHO provides information to Member States. While the IHR mandates Member States provide certain information with 24- or 48-hours, Article 10 only requires the WHO to provide information "as soon as possible."<sup>297</sup> After the Wuhan Municipal Health Commission notified the WHO of the outbreak, it took the WHO four days to publicly report the notification on social media and five days to issue a technical publication to the scientific and public health communities. The IHR should be modified to require the WHO to

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<sup>294</sup> 2005 IHR.

<sup>295</sup> "Frequently Asked Questions about the International Health Regulations (2005)." *World Health Organization*, 18 Aug. 2009, [www.who.int/ihr/about/faq/en/](http://www.who.int/ihr/about/faq/en/).

<sup>296</sup> *Ibid.*

<sup>297</sup> 2005 IHR.

inform Member States of all reports and notifications received from a Member State within 48 hours.

Finally, Article 12 concerns the determination of a Public Health Emergency of International Concern. While Section 4 of the Article provides a list of items for the Director-General to consider, there is no requirement that the Director-General heed the advice of the Emergency Committee or provide justification of his decision to declare, or not declare, a PHEIC. We believe that the breakdown of the PHEIC process during the Kivu Ebola epidemic and the current COVID-19 pandemic illustrates the need to reform and formalize this process. PHEIC decisions should be made based on scientific information and global health best practices, not any other considerations. To this end, we recommend reforms around the structure and authority of the Emergency Committee, as well as the processes in Article 12, that would achieve this goal.

## **VIII. CONCLUSION**

There remain many unanswered questions as to the origins of SARS-CoV-2 and the cause of the COVID-19 global pandemic. New information continues to leak out of the PRC showing the scale of CCP efforts to hide and cover up the outbreak. Director-General Tedros' full-throated defense of the CCP's response and embrace of their revisionist history remains incredibly concerning. Reflecting on what we have uncovered so far, the failures of the CCP to protect their citizens and fulfill their obligations under international law have resulted in disappeared journalists, a world seized by a public health emergency, a shattered world economy, and hundreds of thousands of dead.

Senior CCP leaders, including CCP General Secretary Xi Jinping, knew a pandemic was ongoing weeks before it was announced. Instead of warning the world, the CCP chose to nationalize foreign supply chains and secretly buy up medical supplies in foreign countries to ship to the PRC. When countries complained, or advocated for an investigation into the CCP cover-up, the PRC threatened bans on exports or instituted massive tariffs to punish those countries. The CCP continues to seek to bully not only the WHO, but other countries around the world who want to understand the core failures that lead to COVID-19 becoming a global pandemic.

Research shows the CCP could have reduced the number of cases in China by up to 95% had it fulfilled its obligations under international law and responded to the outbreak in a manner consistent with best practices. It is highly likely the ongoing pandemic could have been prevented. The WHO, despite internal discussions about the lack of transparency and cooperation from the CCP, continues to praise General Secretary Xi and the PRC for its handling of the virus. As such, it is incumbent upon the United States and likeminded WHO Member States to ensure the accountability and reforms at the WHO necessary to prevent the CCP's malfeasance from giving rise to a third pandemic during the 21<sup>st</sup> century.

## IX. APPENDIX

### Timeline of Key Events in the Chinese Communist Party's Cover-up

**December 2019 – January 2020:** CCP leaders know about coronavirus but take aggressive steps to hide it from the public, including detaining doctors who warned about the virus and censoring media on the virus.

**Dec. 30, 2019:** Doctors in Wuhan report positive tests for “SARS Coronavirus” to Wuhan health officials. Under WHO regulations, China is required to report these results within 24 hours. China fails to inform the WHO about the outbreak.

**Dec. 31, 2019:** WHO officials in Geneva become aware of media reports regarding an outbreak in Wuhan and direct the WHO China Country Office to investigate. Taiwan informs WHO about human-to-human transmission, but data is not published on WHO's data exchange platform.

**Jan. 1, 2020:** Hubei Provincial Health Commission official orders gene sequencing companies and labs who had already determined the novel virus was similar to SARS to stop testing and to destroy existing samples.

**Jan. 2, 2020:** The Wuhan Institute of Virology (WIV) completes gene sequencing of the virus, but the CCP does not share the sequence or inform the WHO.

**Jan. 3, 2020:** China's National Health Commission ordered institutions not to publish any information related to the “unknown disease” and ordered labs to transfer samples to CCP controlled national institutions or destroy them.

**Mid-Late January:** Despite knowing about the virus, CCP allowed massive travel within China and abroad during the Spring Festival (3 billion estimated trips over 40 days), and Wuhan held a celebratory potluck with more than 40,000 families eating from 14,000 dishes.

**Jan. 11-12, 2020:** After a researcher in Shanghai leaks the gene sequence online, the CCP transmits the WIV's gene sequencing information to the WHO that was completed 10 days earlier. The Shanghai lab where the researcher works is ordered to close.

**Jan. 14, 2020:** Wuhan health authorities claim no human-to-human transmission from coronavirus. This assessment was tweeted by WHO the same day. According to classified documents obtained by the Associated Press, Xi Jinping is warned by top Chinese health official that a pandemic is occurring.

**Jan. 22, 2020:** WHO mission to China admits some evidence of human-to-human transmission.

**Jan. 23, 2020:** After the Emergency Committee is divided on whether to declare a Public Health Emergency of International Concern (PHEIC), Director-General Tedros decides not to. This delay contributed to a regional epidemic turning into a global pandemic.

**Jan. 23, 2020:** The CCP institutes a city-wide lockdown of Wuhan. However, before the lockdown goes into effect, an estimated 5 million people leave the city.

**Jan. 29, 2020:** Tedros praises the CCP's response to the virus, saying their transparency was "very impressive, and beyond words" and that the CCP was "actually setting a new standard for outbreak response."

**Jan. 30, 2020:** One week after declining to do so, Tedros declares a Public Health Emergency of International Concern.

**Feb. 1, 2020:** First death outside of the PRC occurs, in the Philippines.

**Feb. 7, 2020:** Dr. Li, who first shared the positive SARS test results with his classmates via WeChat, dies from COVID-19.

**Feb. 9, 2020:** The death toll for COVID-19 surpasses that of SARS.

**Feb. 15, 2020:** First death from COVID-19 outside of Asia occurs, in France.

**Feb. 16, 2020:** WHO and PRC officials begin a nine-day "WHO-China Joint Mission on Coronavirus Disease 2019" and travel to China to examine the outbreak and origin of COVID-19. Many team members, including at least one American, were not allowed to visit Wuhan on the trip.

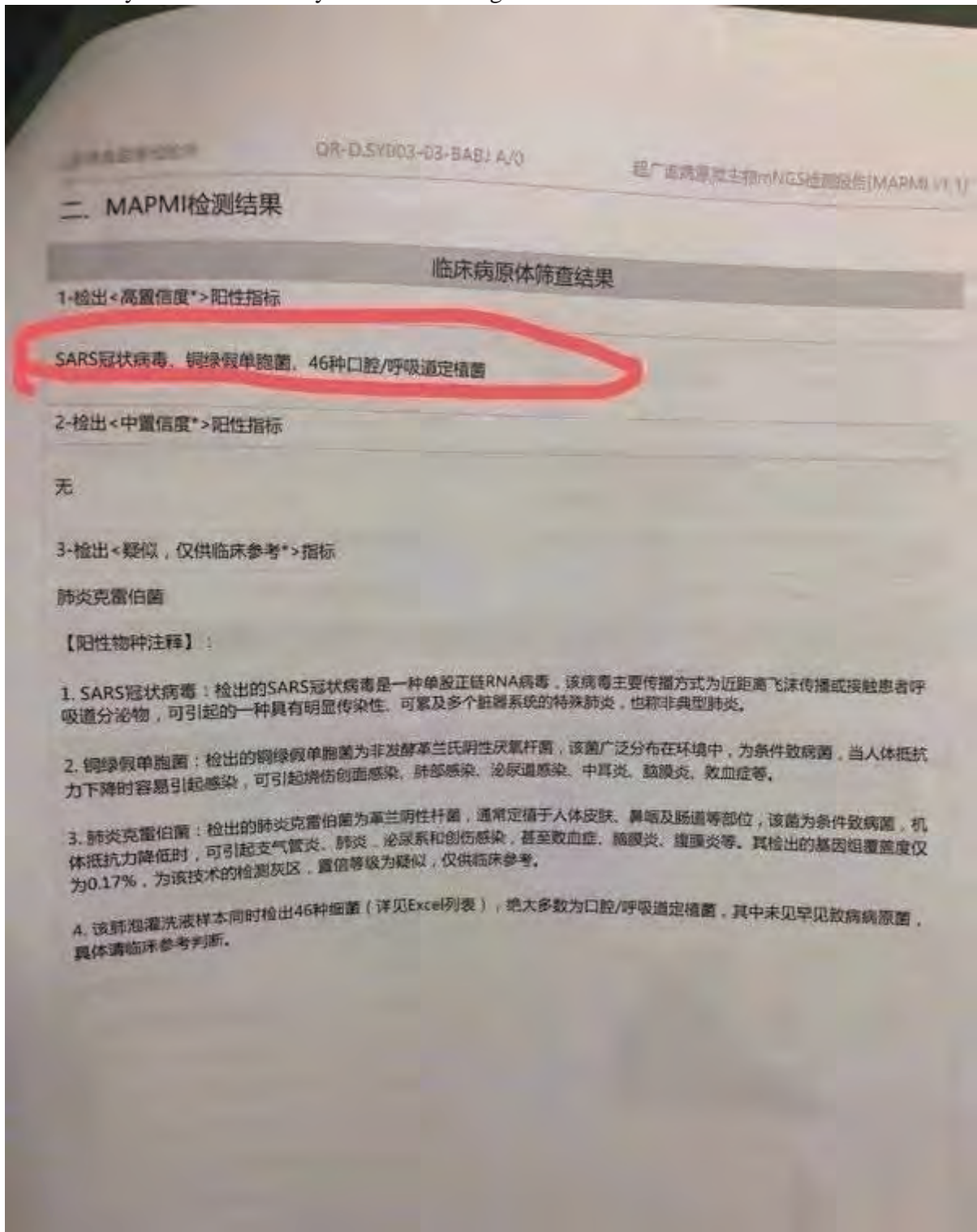
**Feb. 25, 2020:** For the first time, more new cases are reported outside of PRC than within.

**Feb. 26, 2020:** The WHO-China Joint Mission issues its findings, praising the PRC for its handling of the outbreak.

**Feb. 29, 2020:** The first reported COVID-19 death in the United States occurs.

**March 11, 2020:** The WHO officially declares the COVID-19 outbreak a pandemic after 114 countries had already reported 118,000 cases including more than 1,000 in the United States.

Laboratory Results shared by Dr. Ai Denoting a Positive Test for "SARS coronavirus"





Screenshot of Dr. Li's Messages Regarding Positive SARS Tests





Letter from Shanghai Fudan University Public Health Clinical Center to the National Health  
Commission

上海市  
复旦大学附属 公共卫生临床中心

关于湖北省武汉市华南海鲜市场不明原因发热肺炎疫情  
的病原学调查报告

国家卫生健康委员会：

我单位（上海市公共卫生临床中心）张永振教授团队与武汉市中心医院、武汉市 CDC 合作，于 2020 年 1 月 5 日从湖北省武汉市华南海鲜市场一名不明原因发热肺炎病人呼吸道灌洗液中检测出类 SARS 冠状病毒，经过高通量测序获得了该病毒的全基因组，序列分析发现该病毒与类 SARS 冠状病毒同源性高达 89.11%，命名为 Wuhan-Hu-1 冠状病毒（WHCV）。由于我们仅有 1 例重症病人的标本，根据我们对该病人及其他病人临床特征等综合分析，造成本次武汉华南海鲜市场不明原因发热肺炎疫情可能是由该新型 Wuhan-Hu-1 冠状病毒引起。鉴于该病毒与造成 SARS 疫情的冠状病毒同源，应是经呼吸道传播，建议在公共场所采取相应的防控措施以及在临床救治中采用抗病毒治疗。

抄送 上海市卫生健康委员会，上海市申康医院发展中心

上海市公共卫生临床中心

2020 年 1 月 5 日

Letter Signed by Dr. Li under Coercion from Wuhan Public Security Bureau

武汉市公安局 武昌分局 中南路街派出所

训 诫 书

武公（中）字（2020）第 3 号

被训诫人 李文亮 性别 男 出身年月 1970 年 1 月

身份证号 350102197001010000

现住址（户籍所在地） 武汉市武昌区民主路 648 号 1 栋 2 单元 23 楼 2305 室

工作单位 武汉市中心医院

违法行为（时间、地点、参与人、人数、反映何问题、后果等）

2019 年 12 月 30 日在微信群“武汉大学临床 04 级”发表有关华南水果海鲜市场确诊 7 例 SARS 的不属实的言论。

现在依法对你在互联网上发表不属实的言论的违法问题提出警示和训诫。你的行为严重扰乱了社会秩序。你的行为已超出了法律所允许的范围，违反了《中华人民共和国治安管理处罚法》的有关规定，是一种违法行为！

公安机关希望你积极配合工作，听从民警的规劝，至此中止违法行为。你能做到吗？

答：能

我们希望你冷静下来好好反思，并郑重告诫你：如果你固执己见，不思悔改，继续进行违法活动，你将会受到法律的制裁！你明白了吗？

答：明白

被训诫人：李文亮

训诫人：胡松涛 徐金航

2020 年 1 月 3 日

工作单位：



2020 年 1 月 3 日



Discipline Notice from the CCP's Discipline Inspection Commission for Taizhou City Number  
Two People's Hospital

# 泰州市第二人民医院

## 关于急诊科护士李敏违反新型冠状病毒感染的肺炎疫情防控工作纪律处理意见的通报

各部门、各科室：

当前，正值新型冠状病毒感染的肺炎疫情防控的关键时期，全院广大干部职工在各级政府及卫生行政主管部门的坚强领导下，团结一心，抗击疫情，但仍有个别人员纪律意识不强。2020年1月26日，急诊科护士李敏，无视疫情防控工作纪律，与同学微信聊天时擅自谈论疫情防控相关信息，聊天记录被其同学发至微信群，造成不良影响。根据泰州二院《关于强化新型冠状病毒感染的肺炎疫情防控工作监督执纪问责的通知》规定，决定给予李敏全院通报批评处理，后续处理意见待进一步研究确定。请各科室引以为戒，切实加强医务人员纪律教育，任何人不得擅自接受媒体采访或发布疫情防控相关信息，不得在家族群、同学群等微信群发布相关敏感信息。



2018 Cables from Embassy Beijing and Consulate General Wuhan to State Department  
Headquarters in Washington, D.C.

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SBU



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MRN: 18 BEIJING 138  
Date/DTG: Jan 19, 2018 / 190739Z JAN 18  
From: AMEMBASSY BEIJING  
Action: WASHDC, SECSTATE ROUTINE  
E.O.: 13526  
TAGS: SHLH, ETRD, ECON, PGOV, CN  
Captions: SENSITIVE  
Reference: 17 WUHAN 48  
Subject: China Opens First Bio Safety Level 4 Laboratory

1. (SBU) **Summary and Comment:** The Chinese Academy of Sciences (CAS) has recently established what is reportedly China's first Biosafety Level 4 (BSL-4) laboratory in Wuhan. This state-of-the-art facility is designed for prevention and control research on diseases that require the highest level of biosafety and biosecurity containment. Ultimately, scientists hope the lab will contribute to the development of new antiviral drugs and vaccines, but its current productivity is limited by a shortage of the highly trained technicians and investigators required to safely operate a BSL-4 laboratory and a lack of clarity in related Chinese government policies and guidelines. (b)(5)

(b)(5)

(b)(5)

End Summary and Comment.

China Investing in Infectious Disease Control

2. (U) Between November 2002 and July 2003, China faced an outbreak of Severe Acute Respiratory Syndrome (SARS), which, according to the World Health Organization, resulting in 8,098 cases and leading to 774 deaths reported in 37 countries. A majority of cases occurred in China, where the fatality rate was 9.6%. This incident convinced China to prioritize international cooperation for infectious disease control. An aspect of this prioritization was China's work with the Jean Merieux BSL-4 Laboratory in Lyon, France, to build China's first high containment laboratory at Wuhan's Institute of Virology (WIV), an institute under the auspices of the Chinese Academy of Sciences (CAS). Construction took 11 years and \$44 million USD, and construction on the facility was completed on January 31, 2015. Following

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two years of effort, which is not unusual for such facilities, the WIV lab was accredited in February 2017 by the China National Accreditation Service for Conformity Assessment. It occupies four floors and consists of over 32,000 square feet. WIV leadership now considers the lab operational and ready for research on class-four pathogens (P4), among which are the most virulent viruses that pose a high risk of aerosolized person-to-person transmission.

Unclear Guidelines on Virus Access and a Lack of Trained Talent Impede Research

3. (SBU) In addition to accreditation, the lab must also receive permission from the National Health and Family Planning Commission (NHFP) to initiate research on specific highly contagious pathogens. According to some WIV scientists, it is unclear how NHFP determines what viruses can or cannot be studied in the new laboratory. To date, WIV has obtained permission for research on three viruses: Ebola virus, Nipah virus, and Xinjiang hemorrhagic fever virus (a strain of Crimean Congo hemorrhagic fever found in China's Xinjiang Province). Despite this permission, however, the Chinese government has not allowed the WIV to import Ebola viruses for study in the BSL-4 lab. Therefore, WIV scientists are frustrated and have pointed out that they won't be able to conduct research project with Ebola viruses at the new BSL-4 lab despite of the permission.

(b)(6)

(b)(6)

Thus, while the BSL-4 lab is ostensibly fully accredited, its utilization is limited by lack of access to specific organisms and by opaque government review and approval processes. As long as this situation continues, Beijing's commitment to prioritizing infectious disease control - on the regional and international level, especially in relation to highly pathogenic viruses, remains in doubt.

(b)(6)

(b)(6) noted that the new lab has a serious shortage of appropriately trained technicians and investigators needed to safely operate this high-containment laboratory. University of Texas Medical Branch in Galveston (UTMB), which has one of several well-established BSL-4 labs in the United States (supported by the National Institute of Allergy and Infectious Diseases (NIAID of NIH)), has scientific collaborations with WIV, which may help alleviate this talent gap over time. Reportedly, researchers from GTMB are helping train technicians who work in the WIV BSL-4 lab. Despite this, (b)(6) they would welcome more help from U.S. and international organizations as they establish "gold standard" operating procedures and training courses for the first time in China. As China is building more BSL-4 labs, including one in Harbin Veterinary Research Institute subordinated to the Chinese Academy of Agricultural Sciences (CAAS) for veterinary research use (b)(6) the training for technicians and investigators working on dangerous pathogens will certainly be in demand.

Despite Limitations, WIV Researchers Produce SARS Discoveries

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6. (SBU) The ability of WIV scientists to undertake productive research despite limitations on the use of the new BSL-4 facility is demonstrated by a recent publication on the origins of SARS. Over a five-year study, (b)(6) (and their research team) widely sampled bats in Yunnan province with funding support from NIAID/NIH, USAID, and several Chinese funding agencies. The study results were published in PLoS Pathogens online on Nov. 30, 2017 (1), and it demonstrated that a SARS-like coronavirus isolated from horseshoe bats in a single cave contain all the building blocks of the pandemic SARS-coronavirus genome that caused the human outbreak. These results strongly suggest that the highly pathogenic SARS-coronavirus originated in this bat population. Most importantly, the researchers also showed that various SARS-like coronaviruses can interact with ACE2, the human receptor identified for SARS-coronavirus. This finding strongly suggests that SARS-like coronaviruses from bats can be transmitted to humans to cause SARS-like disease. From a public health perspective, this makes the continued surveillance of SARS-like coronaviruses in bats and study of the animal-human interface critical to future emerging coronavirus outbreak prediction and prevention. (b)(5)

(b)(5) WIV scientists are allowed to study the SARS-like coronaviruses isolated from bats while they are precluded from studying human-disease causing SARS coronavirus in their new BSL-4 lab until permission for such work is granted by the NHFCP.

1. Hu B, Zeng L-P, Yang X-L, Ge X-Y, Zhang W, Li B, et al. (2017) Discovery of a rich gene pool of bat SARS-related coronaviruses provides new insights into the origin of SARS coronavirus. PLoS Pathog 13(11): e1006698. <https://doi.org/10.1371/journal.ppat.1006698>

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C) 11 MUMBAI 630  
D) 17 TOKYO 716  
E) 13 SEOUL 790  
Subject: China Virus Institute Welcomes More U.S. Cooperation on Global Health Security

1. (SBU) **Summary with Comment:** China's Wuhan Institute of Virology, a global leader in virus research, is a key partner for the United States in protecting global health security. Its role as operator of the just-launched Biosafety Level 4 (or "P4") lab -- the first such lab in China -- opens up even more opportunities for expert exchange, especially in light of the lab's shortage of trained staff (Ref A). (b)(5)

(b)(5)

(b)(5)

End Summary with

Comment.

2. (U) Wuhan Institute of Virology researchers and staff gave an overview of the lab and current cooperation with the United States to visiting Environment, Science, Technology and Health Counsellor Rick Switzer and Consulate Wuhan Consul General Jamie Fouss in late March. In the last year, the institute has also hosted visits from the National Institutes of Health (NIH), National Science Foundation, and experts from the University of Texas Medical Branch in Galveston. The institute reports to the Chinese Academy of Sciences in Beijing.

**P4 Lab is Open and Transparent, Officials Emphasize**

3. (SBU) The Wuhan P4 lab, referring to labs with the highest level of safety precautions, became fully operational and began working with live viruses early this year. Institute officials said they believed it is the only operational P4 lab in Asia aside from a U.S. Centers for Disease

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Control (CDC)-supported facility in Pune, India (Ref C). China plans to stand up a second P4 lab in Harbin. Institute officials said Japan's biosafety labs are "old" and lack cutting-edge equipment, so they consider Japan's labs to be "P3 Plus" (Note: the Japanese government says it has one P4-level lab in the Tokyo suburbs, though its activities are limited, and Japan is building a new P4 lab in Nagasaki, see Ref D. Taiwan operates at least one P4 lab. South Korea was close to opening a P4 lab as of last year, see Ref E. *End Note.*) Wuhan's lab is located about 20 miles from the city center in Zhengdian district, and the institute plans to gradually consolidate its other training, classroom and lab facilities at that location.

4. (U) Officials described the lab as a "regional node" in the global biosafety system and said it would play an emergency response role in an epidemic or pandemic. The lab's English brochure highlighted a national security role, saying that it "is an effective measure to improve China's availability in safeguarding national bio-safety if [a] possible biological warfare or terrorist attack happens."

5. (SBU) Institute officials said there would be "limited availability" for international and domestic scientists who had gone through the necessary approval process to do research at the lab. They stressed that the lab aimed to be a "worldwide, open platform" for virology. They said they welcomed U.S. Centers for Disease Control (CDC) experts, noting that the Chinese Academy of Sciences was not strong on human disease expertise, having only focused on it in the last 15 years, after the SARS outbreak. A Wuhan-based French consulate official who works on science and technology cooperation with China also emphasized that the lab, which was initiated in 2004 as a France-China joint project, was meant to be "open and transparent" to the global scientific community. "The intent was to set up a lab to international standards, and open to international research," he said. French experts have provided guidance and biosafety training to the lab, which will continue, the French official said. Institute officials said that France provided the lab's design and much of its technology, but that it is entirely China-funded and has been completely China-run since a "handover" ceremony in 2016.

6. (U) In addition to French assistance, experts from the NIH-supported P4 lab at the University of Texas Medical Branch in Galveston have trained Wuhan lab technicians in lab management and maintenance, institute officials said. The Wuhan institute plans to invite scientists from the Galveston lab to do research in Wuhan's lab. One Wuhan Institute of Virology researcher trained for two years at the Galveston lab, and the institute also sent one scientist to U.S. CDC headquarters in Atlanta for six months' work on influenza.

#### NIH-Supported Research Revises SARS Origin Story

7. (U) NIH was a major funder, along with the Natural Science Foundation of China (NSFC), of SARS research by the Wuhan Institute of Virology's (b)(6) (b)(6)

(b)(6) (b)(6) This lends weight to the theory that SARS originated in bat populations before jumping first to civet cats (likely via bat feces) and then to humans. (b)(6)

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(b)(6)

(b)(6) team has provided support in statistical modeling to assess the risk of more coronaviruses like SARS crossing over to human populations.

#### Ready to Help with the Global Virome Project

8. (U) Institute officials expressed strong interest in the Global Virome Project (GVP), and said Chinese funding for the project would likely come from Chinese Academy of Sciences funding already earmarked for One Belt, One Road-related initiatives. The GVP aims to launch this year as an international collaborative effort to identify within ten years virtually all of the planet's viruses that have pandemic or epidemic potential and the ability to jump to humans. "We hope China will be one of the leading countries to initiate the Global Virome Project," one Wuhan Institute of Virology official said. China attended a GVP unveiling meeting in January in Thailand and is waiting for more details on the initiative. The officials said that the Chinese government funds projects similar to GVP to investigate the background of viruses and bacteria. This essentially constituted China's own Virome Project, officials said, but they noted the program currently has no official name.

9. (SBU) The Wuhan Institute of Virology's (b)(6) is the (b)(6) (b)(6) which is designed to show "proof of concept" and be a forerunner to the Global Virome Project. (b)(6) with the EcoHealth Alliance (a New York City-based NGO that is working with the University of California, Davis to manage the (b)(6) recently planned to visit Wuhan to meet with (b)(6) (b)(6) noted that China has expressed interest in building the GVP database, which would put China in a leadership position. Other countries have confidence in China's ability to build such a database, but are skeptical on whether China could remain transparent as a "gatekeeper" for this information (b)(6) said (b)(6) expressed frustration with the slow progress so far in launching GVP, noting that the effort lacked funding sources, needed to hire a CEO, and would have to boost its profile at G7, G20 and other high-level international meetings.

#### U.S.-China Workshop Explores Research Partnerships

10. (U) The Institute also has ongoing collaboration with the U.S. National Science Foundation, including a just-concluded workshop in Shenzhen, involving about 40 scientists from the United States and China, on the topic of the "Ecology and Evolution of Infectious Diseases." Co-sponsored by the Natural Science Foundation of China (NSFC), (b)(6)

(b)(6)

(b)(6) The workshop explored opportunities for U.S.-China research cooperation in areas like using "big data" to predict emerging infectious diseases, climate change's effect on vector-borne diseases, and pathogen transmission between wildlife, domestic animals and humans.

11. (SBU) Some workshop participants also expressed skepticism about the Global Virome Project's (GVP) approach, saying that gaining a predictive understanding of viruses with pandemic potential would require going beyond the GVP's strategy of sample collection, to take an "ecological" approach that considers the virome beyond vertebrate systems to identify

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mechanisms driving pathogen evolution. A follow-on workshop will be held in June at the University of Berkeley. NSF and NSFC hope to jointly announce a funding call for collaborative projects later this year.

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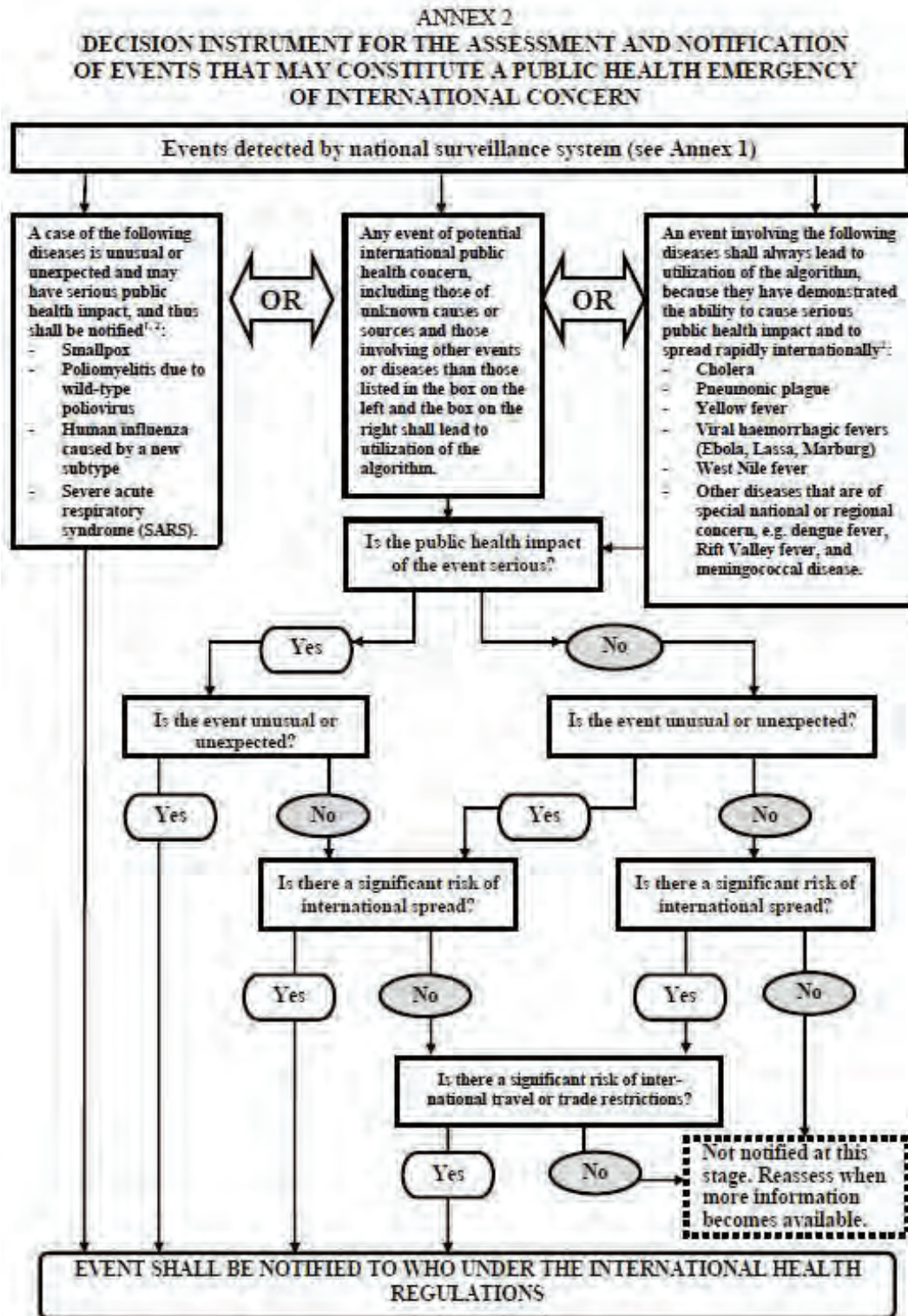
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Annex 2 of the 2005 International Health Regulations



<sup>1</sup> As per WHO case definitions.

<sup>2</sup> The disease list shall be used only for the purposes of these Regulations.

Letter to World Health Organization Director-General Tedros on Outstanding Questions

ELIOT L. ENGEL, NEW YORK  
CHAIRMAN

JASON STEINBAUM  
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MICHAEL T. MCCAUL, TEXAS  
RANKING REPUBLICAN MEMBER

BRENDAN P. SHIELDS  
REPUBLICAN STAFF DIRECTOR

May 8, 2020

Dr. Tedros Adhanom Ghebreyesus  
Director-General  
World Health Organization  
Avenue Appia 20  
1211 Geneva

Dear Director-General Tedros:

I am writing in supplement of my March 23, 2020 letter regarding the COVID-19 pandemic. Over the course of the last few months, it has become increasingly clear that the Chinese Communist Party (CCP) failed to uphold its commitments under the 2005 International Health Regulations (2005 IHR), which were instituted in response to the China's mishandling of the 2003 SARS outbreak. Article 6 of the 2005 IHR requires all Member States to report any SARS cases, as defined in WHO Guidance for the Use of Annex 2, within 24 hours. Instead of abiding by these rules, the CCP arrested doctors who shared positive test results for SARS coronavirus, and ordered laboratories to stop testing and destroy samples. In addition, Articles 6 and 7 require Member States to provide the WHO with "timely, accurate, and sufficiently detailed public health information." The CCP's well documented suppression of relevant information, including the genomic sequence of SARS-CoV-2, is a clear violation of these requirements.

Under the 2005 IHR, the WHO is also required to fulfil certain obligations to Member States, particularly in accordance with Articles 9, 10, and 11. Based on information publicly available, it appears the WHO failed to carry out its mandate in relation to investigating unofficial reports of public health events, seeking verifications of such unofficial reports, and disseminating unofficial reports to Member States, including the U.S. Unfortunately, the public record leaves many unanswered questions about when the CCP provided certain information to the WHO and what, if any, activities the WHO engaged in under Articles 9, 10, and 11.

To that end, I respectfully request you provide answers to the following questions:

- When did the WHO first learn that the outbreak in Wuhan was caused by a coronavirus similar to the virus that caused the 2003 SARS pandemic?
- When did the WHO first confirm that human-to-human transmission was occurring?



- Did the WHO seek verification of Taiwan's reports of SARS cases and ongoing human-to-human transmission in accordance with Article 9? If not, why not?
- If so, did the Government of the People's Republic of China (PRC) comply?
- If the PRC did not comply, why did the WHO not transmit that information to Member States in accordance with Article 10?
- Why did the WHO not transmit the information provided by Taiwan to WHO Member States in accordance with Article 11?
- Has the WHO received similar emails from Taiwan in the past? If so, how were they handled?
- Did the WHO investigate the warnings, in accordance with Article 9, from Dr. Ho, a member of the WHO Collaborating Centre for Infection Disease Epidemiology and Control at the University of Hong Kong, regarding the high likelihood that human-to-human transmission was already occurring? If not, why not?
- If so, did the Government of the PRC comply?
- Does the WHO consider viral isolates and genetic sequencing data "public health information" under Article 6?
- Has the WHO requested live virus samples from the PRC? If so, has the PRC provided said samples?
- When did the WHO become aware of reports that the PRC was suppressing public health information in violation of Articles 6 and 7?
- After becoming aware, did Director-General Tedros request an explanation from the CCP?
- Who were the "select team members" of the WHO-China Joint Mission who were allowed access to Wuhan?
- What actions has the WHO taken in response to the PRC's violations of the 2005 IHR?
- Has the WHO ever taken action against a State Party in response to violations of the IHR?
- What new information was available to Director-General Tedros on January 31<sup>st</sup>, when he declared a PHEIC, that was not publicly reported on January 23<sup>rd</sup>?
- Was the WHO told, or made to feel, that the WHO's access to data, information, and access to potential sites in Wuhan, China was contingent on cooperating with the CCP's narrative of events?

The WHO conducts incredibly important work, often in some of the most challenging places in the world. However, I believe it is important to clear-eyed about the lack of dissemination of key information that was available at the start of this pandemic. The 2005 IHR were implemented in response to failures of the CCP in responding to the 2003 SARS pandemic. It appears that for a second time the status quo has failed to prevent a public health disaster. It is only by establishing an accurate understanding of why actions were, or were not, taken, and the reasoning behind those decisions, that we can prevent similar shortcomings in the future. I look forward to your response.

Sincerely,



Michael T. McCaul  
Republican Ranking Member

Letter to Ranking Member McCaul from Director-General Tedros



**World Health  
Organization**

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The Honorable Michael T. McCaul  
United States House of Representatives  
Committee on Foreign Affairs  
2170 Rayburn House Office Building  
Washington, DC 20515  
USA

20 July 2020

Dear Representative McCaul,

I have the honor to refer to your letters dated 23 March 2020 and 8 May 2020. Allow me to express my solidarity with the people of the United States of America, and my profound respect and appreciation to the United States of America for its partnership and generosity to the World Health Organization (WHO) and to global health priorities.

The United States of America has been among the strongest supporters of WHO since the Organization's establishment in 1948. Through its significant technical and financial support, the United States of America has promoted the work of WHO and has been an essential and active partner to bolster the achievement of "the attainment by all peoples of the highest possible level of health", as specified in the WHO Constitution. Our appreciation for this support is enormous and heartfelt.

Speaking personally and from first-hand experience, I am deeply grateful for the decades of generous support from the United States, which has catalyzed attention and leveraged resources to strengthen global health security through the strengthening of health systems. The United States' leadership in Africa remains a cornerstone of successful public health measures that have advanced African countries' efforts, among other things, to stem the spread of HIV/AIDS, including through the United States President's Emergency Plan for AIDS Relief (PEPFAR), and to advance the work to end polio.

The assistance of the United States in the recent Ebola outbreak in the Democratic Republic of the Congo was invaluable, as are the tireless efforts, of the United States Centers for Disease Control and Prevention (US CDC) to provide technical training and capacity building in all areas of public health.

WHO's partnership with the United States of America has saved lives—countless lives. Indeed, we recently marked the 40<sup>th</sup> anniversary of the eradication of smallpox, the only human disease to ever be eradicated. In the 20<sup>th</sup> century alone, some 300 million people are thought to

cc: The Director, Office of Global Health Affairs, Department of Health and Human Services,  
Washington, DC  
The Secretary of State, Attention: IO/T, Department of State, Washington, DC  
Permanent Mission of the United States of America to the United Nations Office and  
other International Organizations at Geneva

.../2

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The Honorable Michael McCaul, United States House of Representatives,  
Washington DC

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have died from smallpox. The eradication of this scourge is one of the greatest achievements in human history, and it would not have been possible without the support and leadership of the United States of America. Further, the work to eradicate smallpox led directly to the Expanded Programme on Immunization (EPI), which was established by WHO to provide protection against six vaccine-preventable diseases through routine infant immunization. The suffering prevented, and lives saved, by EPI are beyond calculation.

The world is now facing an unprecedented global health emergency and WHO is at the center of the international response, in accordance with its role to direct, coordinate, convene, and furnish technical assistance upon the request of governments. In response to this pandemic, as with all our initiatives, WHO works with and for all people everywhere, without distinction of race, religion, political belief, or economic or social condition. In this context, and as more fully detailed below, I would like to assure you that:

- we took prompt action to draw attention to the risks of this virus, as the evidence and reporting emerged;
- we have acted with objectivity, independence, and impartiality; and
- we welcome a timely review of the global response in a transparent, independent, and comprehensive manner, and by an international review panel, including an examination of the International Health Regulations (2005) (IHR (2005))<sup>1</sup>, the legal framework established by Member States, and under which we operate.

I wish to provide clarity on four aspects of WHO's response: (1) the guiding principles that underpin WHO's work; (2) the central role of IHR (2005) in WHO's response to public health emergencies; (3) WHO's collaboration with the United States of America; and (4) my full commitment to a timely review of the global response. In addition, section (5) provides a discussion of wildlife ("wet") markets, which is in response to your letter dated 23 March 2020.

#### **1. The World Health Organization**

In all its work and actions, WHO is guided by its Constitution<sup>2</sup> and other normative instruments and regulations, notably IHR (2005). WHO advises its 194 Member States on matters of public health, recognizing that each government will make its own decisions on actions to take.

Responding to a pandemic of this nature – a fast-evolving, novel respiratory pathogen – poses many challenges. As with any emerging infectious pathogen, the initial period is one of numerous unknowns regarding its characteristics and how it will affect humanity; those first hours, days, weeks, and months require the focus of all involved and steadfast cooperation and collaboration.

From the first information about the initial cluster of cases of pneumonia of unknown etiology in Wuhan, China, which was received by WHO on 31 December 2019, all of WHO's actions and operations were driven by three fundamental principles underpinning its mandate:

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<sup>1</sup> <https://www.who.int/ihr/publications/9789241596664/en/>

<sup>2</sup> [https://www.who.int/governance/eb/who\\_constitution\\_en.pdf](https://www.who.int/governance/eb/who_constitution_en.pdf)



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(a) objectivity, independence, and impartiality; (b) timely action; and (c) science and evidence-based advice. WHO's actions have also been supported by our organizational transformation initiative. These principles, and the WHO transformation, are discussed in further detail below.

**a. Objectivity, independence, and impartiality**

WHO and its staff work for the improvement of the health of all people around the world. By virtue of their status as international civil servants and the oath of office they take on assuming their duties, all WHO staff undertake their activities impartially, applying their expertise and knowledge without fear of retribution or expectation of favor. WHO's greatest asset; they are among the most knowledgeable experts in the world in their respective fields, and they gather and share knowledge, information, and science freely and impartially with scientists, public health professionals, and others to increase the global and local understanding of diseases and capacity to respond to outbreaks.

**b. Timely action**

From day one, WHO acted to respond as rapidly as the science, evidence, and reporting to WHO would allow: we alerted health authorities to the possibility of human-to-human transmission, urging the highest levels of care and caution for health care workers, and confirmed human-to-human transmission as soon as the data and evidence supported a health pronouncement. These actions were made possible through intense, frank, and regular communication with Chinese authorities and with networks of scientists and public health professionals around the world. The following key events are illustrative, and respond to the factual queries in your letter dated 8 May 2020:

- On 31 December 2019, the WHO Country Office in China based on a report, from the Wuhan Municipal Health Commission, of a cluster of pneumonia cases of unknown cause, immediately alerted the WHO focal point for the International Health Regulations. The following day, WHO activated its emergency response framework for response to disease outbreaks.
- On 2 January 2020, WHO alerted the Global Outbreak Alert and Response Network (GOARN) partners of the cluster of cases. GOARN partners include major public health agencies including the US CDC, laboratories, United Nations agencies, international organizations and nongovernmental organizations.
- WHO took prompt action to carry out a rapid risk assessment of the situation, share information with our Member States as required under IHR (2005) on 5 January 2020, and develop advice and guidance on prevention and control, including alerting early on to the possibility of human-to-human transmission due to the respiratory nature of the disease.
- On 10-11 January 2020, WHO published a comprehensive package of technical guidance alerting health authorities, physicians, and other frontline workers and the public across the world of a new respiratory disease; and advising to look for cases among recent travelers from Wuhan, China, and to protect frontline health workers when caring for or taking samples from patients, due to the respiratory nature of the disease.

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- On 14 January 2020, during a regular press briefing, a WHO expert warned, based on available information and experience with coronaviruses, that human-to-human transmission was possible, and further warned of transmission amplification and the possibility of superspreading events, particularly in health care facilities. At this point there were 43 cases (41 in China, one in Thailand, and one in Japan) and one death (in China) reported.
- On 19 January 2020, WHO stated via social media that there was evidence of limited human-to-human transmission, in line with experience with other respiratory illnesses and, in particular, with other coronavirus outbreaks. At this point there were 126 cases (121 in China, three in Thailand, one in Japan, and one in the Republic of Korea) and three deaths (all in China) reported.
- On 20 and 21 January 2020, WHO staff visited Wuhan, China, and met with Wuhan public health officials to learn about the response. The results of the field visit were made public on 22 January<sup>3</sup>, and on that date, WHO reported that the evidence suggested human-to-human transmission was occurring in Wuhan.
- I convened a COVID-19 Emergency Committee, which met on 22 and 23 January 2020. On 22 January 2020 there were 314 cases globally (309 in China and five outside of China). At the conclusion of their meeting on 23 January 2020, the Emergency Committee had divergent views on declaring a Public Health Emergency of International Concern (PHEIC), but they indicated that they would be prepared to be reconvened in approximately 10 days' time or earlier, should I deem it necessary.
- On 27 January 2020, I arrived in Beijing to meet Chinese leadership, learn more about the response in the People's Republic of China, and to offer technical assistance. I met with His Excellency Mr Xi Jinping, President of the People's Republic of China on 28 January, and discussed the following: continued collaboration on containment measures in Wuhan; public health measures in other cities and provinces; conducting further studies on the severity and transmissibility of the virus; continuing to share data; and a request for China to share biological material with WHO. We agreed that an international team of leading scientists should travel to the People's Republic of China to better understand the context, the overall response, as well as exchange information and experience.
- Upon receipt of further information from outside China, I reconvened the Emergency Committee on 30 January 2020, which was earlier than proposed. At the conclusion of their review of the latest evidence, the Emergency Committee recommended that the Director-General declare a PHEIC. I did so on the same day; this was only the sixth time in the history of IHR (2005) that a PHEIC was declared. On 30 January 2020, when WHO declared the highest level of international emergency, there were 82 cases outside China, and no deaths. Five cases had been reported in the United States of America by that time.

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<sup>3</sup> <https://www.who.int/china/news/detail/22-01-2020-field-visit-wuhan-china-jan-2020>



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Washington DC

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- On 9 February, we deployed our pre-prepared advance team for the WHO-China Joint Mission, having received the final sign-off from the People's Republic of China that day. The team completed five days of intensive preparation for the Mission, working with China's National Health Commission, the China Centre for Disease Control, local partners and related entities and the WHO Country Office in China.
- From 16 to 24 February, the WHO-China Joint Mission travelled to several cities, including Beijing and Wuhan, which were chosen in order to reflect the full range of transmission and response scenarios. The purpose of the mission was to assess the seriousness of this new disease, its transmission dynamics, and the nature and impact of China's control measures. The Mission consisted of 25 national and international experts from the People's Republic of China, Germany, Japan, the Republic of Korea, Nigeria, the Russian Federation, Singapore, the United States of America (experts from the US CDC the US National Institutes of Health) and WHO. They were all selected after broad consultation to secure the best talent from a diversity of geographies and specialties. It was led by Dr Bruce Aylward of WHO, with Dr Liang Wannian of the People's Republic of China as co-lead. The mission report is publicly available.<sup>4</sup>
- Throughout the global outbreak, WHO has regularly sent missions to many countries, and in all WHO regions, to learn from and support responses, at the request of Member States. Particularly in the early stages of the worldwide COVID-19 response, missions went to countries facing relatively high levels of community transmission, such as the Islamic Republic of Iran,<sup>5</sup> Spain<sup>6</sup> and Italy<sup>7</sup>, in addition to the People's Republic of China.

**c. Science and evidence-based advice**

As the global public health agency of the United Nations, the foundations of WHO's work are science, evidence, data, and the experiences of public health professionals drawn from around the world. All information collected and transmitted through Member States, partners, and networks is critically reviewed and analyzed. We use this to inform global public health actions. In doing so, WHO works with its global networks of experts in different technical areas (e.g. virology, clinical management, epidemiology, and infection prevention and control) and uses established channels of communication to ensure that actions and guidance are founded in evidence.

As with all outbreaks, epidemics, and pandemics, WHO's above-mentioned foundations and approach were critical in the case of COVID-19 given the nature of the event – a cluster of cases of acute respiratory disease of an unknown cause, with all the implications that it held, notably the potential for human-to-human transmission and international spread. WHO liaised with its technical partners to advance its understanding of the evidence provided to it, as required under the IHR (2005), including through our Geneva headquarters, our Regional Office for the Western Pacific in Manila, Philippines and our Country Office in China.

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<sup>4</sup> <https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf>

<sup>5</sup> <http://www.emro.who.int/irn/iran-news/delegation-of-who-and-public-health-experts-concludes-covid-19-mission-to-iran.html>

<sup>6</sup> <https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/4/reconfiguring-health-systems-vital-to-tackling-covid-19>

<sup>7</sup> <https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/2/joint-who-and-ecdc-mission-in-italy-to-support-covid-19-control-and-prevention-efforts>

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**d. The WHO transformation**

Following my appointment as Director-General, I immediately embarked on a radical transformation of the Organization, with the aim of strengthening WHO's capacity to promote health, keep the world safe and serve the vulnerable, and with the goal of making WHO a modern, seamless, impact-focused Organization to better help our Member States achieve the health-related Sustainable Development Goals. Through the WHO transformation, and with the generous technical and financial support from the United States of America and other Member States, we have implemented several key reforms that have substantially strengthened our capacity to prepare for and respond to outbreaks and pandemics.

WHO's transformation process aims to reposition, reconfigure and capacitate the Organization within the broader purview of United Nations reform so that its normative and technical work is of an even higher quality, more sharply focused on the needs, demands and expected actions of Member States, and translates directly into results at country level. To do this, we have:

- articulated a strategy that clarifies and prioritizes the role WHO plays in attaining the Sustainable Development Goals, that clearly defines the Organization's goals and targets, and that drives the work of all staff members;
- redesigned and harmonized across major offices the processes that underpin WHO's core technical, business and external relations functions based on best practices and in support of the Organization's strategy;
- put country outcomes at the centre of WHO's work, by aligning the operating model across all three levels for impact at country level and introduced the so-called "agile" management practices that increase quality and responsiveness;
- created a culture and environment that enable effective internal and external collaboration, ensure that work is aligned with strategic priorities, bring out the best in WHO staff members for fulfilling the Organization's mission and continue to attract and retain top talent; and
- established a new approach to communications and resource mobilization, and bolstering partnerships, so that WHO is positioned to shape global health decisions and generate appropriate and sustainable financing.

In the longer term, WHO aims to move from a cycle of repeated reform to a sustainable programme of continuous improvement.

In the context of WHO's work in emergency preparedness and response, four reforms have been particularly important:

- Creation of a new WHO Division for Emergency Preparedness and Response.
- Together with the President of the World Bank, we established the Global Preparedness Monitoring Board, an independent body of high-level experts designed to strengthen global health security through stringent independent monitoring and regular reporting of preparedness.

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With respect to what happens when WHO receives notification of an event that may constitute a PHEIC, the IHR (2005) provide a system for reviewing and taking action in respect of such events, which centers around an Emergency Committee, comprised of independent experts from around the world, and whose role is to review evidence and provide recommendations to the Director-General of WHO regarding the public health event. Based on the recommendations of the Emergency Committee, the Director-General determines whether an event constitutes a PHEIC, which is the only Member States-agreed alarm that alerts Member States to a global public health emergency.

The PHEIC declaration was preceded by numerous warnings and pronouncements by WHO – through daily press briefings (beginning 22 January 2020) and social media, through expert networks, and through publication of many other different types of guidance – that utmost care and prudence should be exercised due to the nature of the unknown, novel respiratory pathogen. Those warnings were followed by similar exhortations to countries to test for COVID-19 and to prepare for the first wave of cases. These calls to action included several sessions at the 146<sup>th</sup> session of the WHO Executive Board, which took place 3-8 February 2020, immediately following the declaration of a PHEIC. The WHO Executive Board is composed of 34 individuals, elected for three-year terms, designated by a Member State elected to do so by the World Health Assembly. The Board's proceedings, which are public and webcast, are open to all Member States, and Members of the Board, which currently includes the United States of America, have elevated rights of participation.

During the Executive Board, WHO held a technical briefing on COVID-19. In my opening remarks,<sup>8</sup> I urged countries to take “action now while we have a window of opportunity”; 99% of cases were then still in China. I further made three key requests to Member States: (1) continue sharing detailed information; (2) do not impose restrictions inconsistent with IHR (2005); and (3) facilitate rapid collaboration between the public and private sectors to develop diagnostics, medicines, and vaccines.

### 3. WHO's collaboration with the United States of America

The United States is a key partner of WHO in all its work. We appreciate that the United States of America, especially as a founding Member State of the United Nations, understands well that the protections you and other countries provide WHO through Article 67 of the WHO Constitution help us to fulfil our objective and exercise our functions on behalf of all countries. With a relatively modest Secretariat compared with the number of diseases and issues that it handles, WHO relies on expert advisory panels<sup>9</sup> to provide technical guidance and support on specific subjects. To give an idea of the scale of the United States' collaboration with WHO and its work, in November 2017, there were 43 such expert panels with a total of 554 experts; of those, 72 (13%) were from the United States of America alone, by far the largest number of experts from any one country.

WHO has always been broadly supported by outstanding United States scientists and public health experts, including as WHO staff members, secondments from United States Government agencies, and United States Government officials with whom the organization interacts frequently. Indeed, beginning with the activation of the WHO incident management

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<sup>8</sup> <https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-technical-briefing-on-2019-novel-coronavirus>

<sup>9</sup> <https://www.who.int/about/collaborations/FactsheetEAP2017.pdf?ua=1>

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support team on 1 January 2020 and during the first critical months of the outbreak, WHO had the privilege of having over a dozen senior experts from US CDC working alongside WHO staff in WHO's Strategic Health Operations Centre; they attended all of our incident management meetings, had access to all our key information, and contributed significantly to the rapid risk assessment and management of activities. The expertise and knowledge shared over the course of those first weeks were invaluable.

Furthermore, several high-level United States Government officials participated in COVID-19-specific advisory committees, networks, or meetings, both in Geneva and Beijing. These included:

- The Global Outbreak Alert and Response Network (GOARN)<sup>10</sup> and its steering committee: On 2 January 2020, the United States of America was informed (along with all other GOARN partners) by WHO of the cases of undiagnosed pneumonia in Wuhan, China.
- A weekly informal coronavirus teleconference with experts from around the world, an important forum for information sharing and advice.
- The IHR Emergency Committee meetings<sup>11</sup> on COVID-19, in which an official of the US CDC participated, on 22–23 January 2020, 30 January 2020, and 30 April 2020.
- A meeting in Beijing on 27 January 2020 between the US CDC Country Director of China programmes and WHO's Director-General and senior staff.
- Meetings of the WHO Executive Board, 3–8 February 2020; as previously mentioned, the United States of America is a member of the Executive Board<sup>12</sup> and, as such, its representatives participated in all sessions of the Board.
- The meeting of the Strategic and Technical Advisory Group for Infectious Hazards (STAG-IH),<sup>13</sup> which took place by teleconference on 5 February 2020 and was attended by two senior United States officials (from United States National Institute of Allergy and Infectious Diseases [US NIAID/NIH] and US CDC), who are members of this advisory group.
- The global research and innovation forum to mobilize international action in response to the novel coronavirus (2019-nCoV) emergency, at WHO's Geneva headquarters on 11–12 February 2020, which included participation from representatives of US NIAID/NIH, US Department of Health and Human Services (US HHS), and US CDC.
- The deep engagement and expertise provided by two American experts from the US NIAID/NIH and US CDC within the 12 member WHO-China Joint Mission<sup>14</sup> on Coronavirus Disease 2019 (COVID-19), which took place from 16 to 24 February 2020.

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<sup>10</sup> <https://extranet.who.int/goarn/goarn-steering-committee>

<sup>11</sup> <https://www.who.int/ihr/procedures/novel-coronavirus-2019/ec-22012020-members/en/>

<sup>12</sup> [https://apps.who.int/gb/gov/en/composition-of-the-board\\_en.html](https://apps.who.int/gb/gov/en/composition-of-the-board_en.html)

<sup>13</sup> <https://www.who.int/emergencies/diseases/strategic-and-technical-advisory-group-for-infectious-hazards/en/>

<sup>14</sup> [https://www.who.int/publications-detail/report-of-the-who-china-joint-mission-on-coronavirus-disease-2019-\(covid-19\)](https://www.who.int/publications-detail/report-of-the-who-china-joint-mission-on-coronavirus-disease-2019-(covid-19))

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- The United States of America, represented by the Secretary of the United States Department of Health & Human Services (US DHHS), attended the Seventy-third World Health Assembly on 18-19 May 2020.

I wish to extend special thanks for the exemplary technical support and collaboration received from the Government of the United States of America through the US CDC, US DHHS, and US NIAID/NIH from the earliest days of the outbreak.

In addition to this extensive collaboration, WHO maintained open communication lines to obtain the fullest information from our Member States and partners and to share that information broadly and impartially. Thus, WHO provided information to all our Member States, including the United States of America, through numerous channels, including the IHR Event Information System and our COVID-19 webpage. For instance:

- On 5 January 2020, WHO sent an official email notification of the outbreak to all IHR (2005) focal points and Points of Contact, including the United States national focal for IHR. In addition, eight US DHHS and four US CDC officials were copied on this email.
- As of 22 January 2020, I began providing press briefings, first daily and later three times per week, to answer questions from the global press. Transcripts of these remarks are published<sup>15</sup> on the WHO website.
- Beginning 14 February 2020, WHO began holding weekly briefings for Member States to apprise them of updates in the global situation and to answer questions.
- The analyses and technical guidance regularly updated on our WHO COVID-19 webpage<sup>16</sup> have provided impartial and evidence-based information to support a coordinated, global, and effective response.
- My speeches and remarks – including those during the Executive Board – are published on the WHO website.<sup>17</sup>

#### 4. Review of the international health response to COVID-19

I wish to confirm my strong commitment to a timely review of the global response to COVID-19 in a transparent, independent, and comprehensive manner by an international review panel. I am committed to transparency, accountability, and the continuous improvement of WHO and will faithfully fulfill the mandate of the resolution adopted by the World Health Assembly on 19 May 2020 to review experience gained and lessons learned from the WHO-coordinated international health response to COVID-19.

In that regard, on 9 July I announced the establishment of an Independent Panel for Pandemic Preparedness and Response (IPPR). The aim of the Panel is to carry out the evaluation commissioned by the World Health Assembly in May 2020. The co-chairs of the panel are Ms Helen Clark, former Prime Minister of New Zealand, and Ms Ellen Johnson Sirleaf, former President of Liberia.

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<sup>15</sup> <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/media-resources/press-briefings/1>

<sup>16</sup> <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>

<sup>17</sup> <https://www.who.int/dg/speeches>

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In my announcement I encouraged all WHO Member States to offer suggestions for world-class candidates for panel membership, and I further proposed that the co-chairs, in consultation with Member States, take the lead for the development of the panel's terms of reference. I also recommended that the panel be supported by an independent secretariat, fully accountable to the co-chairs and the Panel, and that the Panel reports to the Seventy-fourth World Health Assembly in May 2021, with an interim report to the Seventy-third World Health Assembly that will be re-convened in November 2020.

In addition, the Independent Oversight and Advisory Committee for the WHO Health Emergencies Programme will continue its existing work. It has already presented an interim report on WHO's response to COVID-19, assessing the first months of the response and providing useful recommendations. Guided by the Member States of the Organization, WHO is committed to taking these steps.

The resolution adopted by the World Health Assembly on 19 May 2020 also establishes other key mandates, including calling upon all parties to IHR (2005) to act in accordance with them, and working with relevant international agencies and countries in identifying the zoonotic source of the virus and the route(s) of introduction into the human population. The work of the Secretariat on these and all other tasks the Health Assembly set out are already underway. I am committed to their full and effective implementation. In that regard, I expect that many of the questions and considerations contained in your letter dated 8 May will be addressed in the context of this review.

The fact that these important mandates were adopted by consensus, and are a result of a proposal by an unprecedented number of WHO Member States, reflects a deep truth that this pandemic has made clear: we are all in this together. Working together, we will come out of this worldwide emergency wiser, safer, and better prepared to protect everyone everywhere against future global health risks.

#### **5. Live wildlife markets**

Your letter dated 23 March highlights the threats of exotic zoonotic diseases to human health. WHO has long recognized these threats and is at the forefront of efforts to reduce, and eventually eliminate, their effects on the people of all countries. It is a WHO priority to reduce the burden of foodborne diseases and zoonotic illness, which affect as many as 600 million people yearly, often with severe adverse effects and poor outcomes.

WHO is the lead public health agency in tackling such emerging diseases such as the Middle East Respiratory Syndrome (MERS), avian influenza, and Ebola virus disease under the framework of the IHR (2005). We are currently working side by side with frontline health care workers in Africa to stem the spread of Ebola. Likewise, we are working with the health sectors in the Middle East and Africa to eliminate the threat from MERS. We have successfully contained the dangers of H5N1 avian influenza in Asia through cooperation and collaboration with frontline national agencies in affected countries. At present, we are fully engaged in the COVID-19 response.

WHO calls for banning the trade of exotic wildlife as food. We support Member States and United Nations partner organizations in the development or strengthening of strict regulations to this effect. WHO works in close tripartite collaboration with the Food and Agriculture Organization (FAO) and the World Organization for Animal Health (OIE) to promote cross-sectoral collaboration

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to address risks from zoonoses and other public health threats existing and emerging at the human-animal-ecosystems interface, and provide guidance on how to reduce these risks.

In addition, we recognize that some traditional fresh food markets (also called “wet markets”) and especially those selling live animals, when not properly managed, provide optimal conditions for the zoonotic transfer and evolution of infectious disease agents. These traditional live animal markets are major contact points between people and live animals, making them potentially critical sources of viral amplification and infection.

WHO is working with governments worldwide to prohibit the marketing of exotic and endangered wild animals for food by assisting in strengthening national regulations to prohibit this trade and in preparing guidelines for enhancing enforcement of these regulations. As part of our food safety campaigns, we are also working to improve standards of hygiene and sanitation in wet markets. A key goal of these standards and of our guidelines on healthy food markets is to separate live animals sold for food from the market and, more importantly, from the public so as to reduce the risk of the spread of zoonotic diseases.

We must also recognize that traditional food markets and “wet markets” are the main source of affordable food for poorer people in many developing countries. They have an important economic and social role. Due consideration needs to be given to how to address the wider impact on these societies when considering the closure of sections of these markets or, where the sale of live animals is the only activity, closure of the entire market.

WHO is working with global experts and national governments to develop new policies and regulations, based on the best scientific evidence as well as an understanding of the cultural, economic, and social role of these markets. WHO, in conjunction with partner agencies, will be issuing interim guidance in this respect in short course. Our intervention strategies are based on the following actions:

- strengthening regulations to prohibit marketing and trade of live wild animals as food;
- developing guidelines and training food inspectors to ensure enforcement of these regulations;
- separating all operations associated with the slaughter and sale of food animals from public access areas in wet markets;
- improving the standards of hygiene and sanitation in wet markets, with an emphasis on toilet facilities, handwashing, and waste disposal; and
- with partner organizations, strengthening surveillance of zoonotic diseases in animal populations.

We understand the urgent need to galvanize the efforts of human health, food safety, and veterinary public health agencies in all countries to implement effective changes. In that respect, pursuant to the World Health Assembly resolution on COVID-19 adopted in May 2020 discussed in detail in section 4 of this letter, WHO will continue to work closely with the World Organization for Animal Health (OIE), the Food and Agriculture Organization of the United Nations (FAO) and countries, as part of the “One-Health Approach”.

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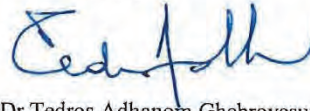
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Through efforts such as scientific and collaborative field missions, which will enable targeted interventions and a research agenda to reduce the risk of similar events occurring, the work will aim to identify the zoonotic source of the virus and the route of introduction to the human population, including the possible role of intermediate hosts.

We will also provide guidance on how to prevent infection with severe acute respiratory syndrome coronavirus 2 (SARS-COV2) in animals and humans and prevent the establishment of new zoonotic reservoirs, and how to reduce further risks of emergence and transmission of zoonotic diseases.

As we continue to press forward with the critical work of confronting COVID-19, it is my sincerest wish that the United States of America will continue to be a key partner in the international response, providing its expertise, cooperation, and collaboration to WHO and other Member States as it has so consistently done throughout past crises, and, I hope, through any that may lie ahead.

Yours sincerely,



Dr Tedros Adhanom Ghebreyesus  
Director-General

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# Exhibit

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Date	Object Desc	Description	Vendor	Amount
20200422	MEDICAL & DENTAL SUPPLIES	COVID19-LATEX GLOVES	GRAINGER	248.8
20200422	MINOR REPAIR, MAINT & IMPROVEMENT SERV	COVID19-DISPOSABLEGLOVES	GRAINGER	158.16
20200422	MINOR REPAIR, MAINT & IMPROVEMENT SERV	COVID19-DISPOSABLEGLOVES	GRAINGER	155.88
20200422	MINOR REPAIR, MAINT & IMPROVEMENT SERV	COVID19-DISPOSABLEGLOVES	GRAINGER	79.08
20200422	MINOR REPAIR, MAINT & IMPROVEMENT SERV	COVID19-DISPOSABLEGLOVES	GRAINGER	70.16
20200422	MINOR REPAIR, MAINT & IMPROVEMENT SERV	COVID19-DISPOSABLEGLOVES	GRAINGER	70.16
20200422	MINOR REPAIR, MAINT & IMPROVEMENT SERV	COVID19-DISPOSABLE GLOVES	GRAINGER	51.9
20200422	UNIFORMS & CLOTHING	COVID19-SAFETYGOGGLES	FASTENAL COMPANY	1232.7
20200424	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS/ALCOH	PROCUREMENT CARD PAYMENT	103.42
20200424	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS/ALCOH	PROCUREMENT CARD PAYMENT	66.1
20200424	MEDICAL & DENTAL SUPPLIES	COVID-19- MASKS	PROCUREMENT CARD PAYMENT	8.97
20200424	OFFICE SUPPLIES	COVID-19-MASK SUPPLIES	ONEAL, CHERI D	690.4
20200424	OTHER SPECIFIC USE SUPPLIES	COVID-19- SAFETY GLOVES	PROCUREMENT CARD PAYMENT	87.88
20200424	OTHER SPECIFIC USE SUPPLIES	COVID-19-LATEX GLOVES	STAPLES ADVANTAGE	63.3
20200424	UNIFORMS & CLOTHING	COVID-19- SAFETY GOGGLES	GLOBAL EQUIPMENT COMPANY INC	1212.26
20200424	UNIFORMS & CLOTHING	COVID-19-SUPPLIESMAKEMASK	WAL-MART COMMUNITY	605.68
20200424	UNIFORMS & CLOTHING	COVID-19-FACEMASKSUPPLIES	WAL-MART COMMUNITY	88.92
20200424	UNIFORMS & CLOTHING	COVID-19-GOGGLES	PROCUREMENT CARD PAYMENT	41.88
20200428	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MEDLINE INDUSTRIES INC	137.49
20200428	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 MASK STORAGE	HENRY KRAFT INC	46.69
20200429	BUILDING/STORAGE/STRUCTURE LEASES, OPER	COVID-19-PPE WAREHOUSE	INDUSTRIAL WAREHOUSE &	90000
20200429	MEDICAL & DENTAL SUPPLIES	COVID-19-MASKS	NMS LLC	5118280.25
20200429	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	848100
20200429	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	336672
20200429	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	336672
20200429	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	95232
20200429	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	95064
20200429	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	CLEARMASK LLC	50000
20200429	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	1056
20200429	MEDICAL & DENTAL SUPPLIES	COVID-19-SHOE COVERS	GRAINGER	308
20200429	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	300
20200429	MEDICAL & DENTAL SUPPLIES	COVID-19-SHOE COVERS	GRAINGER	184.8
20200429	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	168
20200429	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	168
20200429	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	168
20200429	MEDICAL & DENTAL SUPPLIES	COVID-19-SHOE COVERS	GRAINGER	30.8
20200430	EXPRESS & FREIGHT SERVICES	COVID-19-FREIGHT FEE	CUSTOM SCREEN PRINTING OF	129.46
20200430	MEDICAL & DENTAL SUPPLIES	COVID-19 - ISOLATIONGOWNS	ECLAT COMMERCE INC	3686856.25
20200430	MEDICAL & DENTAL SUPPLIES	COVID-19 - ISOLATIONGOWNS	ECLAT COMMERCE INC	2704898.15
20200430	MEDICAL & DENTAL SUPPLIES	COVID-19-GOGGLESFORDMH	EMS PROFESSIONALS INC	34680.63
20200430	MEDICAL & DENTAL SUPPLIES	COVID-19-MASK & THERMOMET	PROCUREMENT CARD PAYMENT	3933
20200430	MEDICAL & DENTAL SUPPLIES	COVID-19-SURGICAL MASKS	PROCUREMENT CARD PAYMENT	3050
20200430	MEDICAL & DENTAL SUPPLIES	COVID-19-SURGICAL MASKS	PROCUREMENT CARD PAYMENT	3050
20200430	MEDICAL & DENTAL SUPPLIES	COVID-19-GOGGLES	OA GENERAL SERVICES - SURPLUS	2880
20200430	MEDICAL & DENTAL SUPPLIES	COVID-19-GLOVES	PROCUREMENT CARD PAYMENT	978
20200430	MEDICAL & DENTAL SUPPLIES	COVID-19 - EXAM GLOVES	MCKESSON MEDICAL-SURGICAL INC	903
20200430	OFFICE SUPPLIES	COVID-19-SUPPWORKEMOTELY	PROCUREMENT CARD PAYMENT	477.02
20200430	OFFICE SUPPLIES	COVID-19-SUPPWORKEMOTELY	PROCUREMENT CARD PAYMENT	63.96
20200430	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	11.91
20200501	MEDICAL & DENTAL SUPPLIES	COVID-19-SEMA PPE	PROCUREMENT CARD PAYMENT	11900
20200501	MEDICAL & DENTAL SUPPLIES	COVID-19-SEMA PPE	PROCUREMENT CARD PAYMENT	8318.37
20200501	MEDICAL & DENTAL SUPPLIES	COVID-19-SEMA PPE	PROCUREMENT CARD PAYMENT	479.88
20200501	OTHER EQUIPMENT	COVID-19-PPE&MEDSUPPLIES	PROCUREMENT CARD PAYMENT	4294.51
20200501	OTHER EQUIPMENT	COVID-19-PPE&MEDSUPPLIES	PROCUREMENT CARD PAYMENT	209.28
20200501	UNIFORMS & CLOTHING	COVID-19-GOWNS/UNIFORM	PROCUREMENT CARD PAYMENT	11400.04
20200504	MEDICAL & DENTAL SUPPLIES	COVID-19-SURGICALMASKS	K & K SUPPLY INC	95000
20200504	MEDICAL & DENTAL SUPPLIES	COVID-19-ISOLATIONGOWNS	ECLAT COMMERCE INC	41800
20200504	MEDICAL & DENTAL SUPPLIES	COVID-19-ISOLATIONGOWNS	ECLAT COMMERCE INC	41800
20200505	OFFICE SUPPLIES	COVID-19-GLOVES	SCHRIEFER'S OFFICE EQUIPMENT,	38.51
20200506	EXPRESS & FREIGHT SERVICES	COVID-19-GLOVES,APRONS,SL	FISHER SCIENTIFIC LLC	4.2
20200506	MEDICAL & DENTAL SUPPLIES	COVID-19-ISOLATIONGOWNS	FISHER SCIENTIFIC LLC	2636.5
20200506	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	FASTENAL COMPANY	2614.5
20200506	MEDICAL & DENTAL SUPPLIES	COVID-19-GLOVES	FISHER SCIENTIFIC LLC	1869
20200506	MEDICAL & DENTAL SUPPLIES	COVID-19-GLOVES	FISHER SCIENTIFIC LLC	1603.2
20200506	OTHER EQUIPMENT	COVID-19 MASK	FASTENAL COMPANY	16078.13
20200506	OTHER SPECIFIC USE SUPPLIES	COVID-19-GLOVES,APRONS,SL	FISHER SCIENTIFIC LLC	17.07
20200506	OTHER SPECIFIC USE SUPPLIES	COVID-19-GLOVES,APRONS,SL	FISHER SCIENTIFIC LLC	16.46
20200507	CLOTHING SUPPLIES	COVID-19 GOWNS	MISSOURI VOCATIONAL	1566
20200507	MEDICAL & DENTAL SUPPLIES	COVID-19-MASKS	MISSOURI VOCATIONAL	2640
20200507	MEDICAL & DENTAL SUPPLIES	COVID-19-MASKS/PPE	PROCUREMENT CARD PAYMENT	270
20200507	MEDICAL & DENTAL SUPPLIES	COVID-19-MASKS/PPE	PROCUREMENT CARD PAYMENT	270
20200507	MEDICAL & DENTAL SUPPLIES	COVID-19-ISOLATIONGOWNS	PROCUREMENT CARD PAYMENT	249.99
20200507	MEDICAL & DENTAL SUPPLIES	COVID-19-ISOLATIONGOWNS	PROCUREMENT CARD PAYMENT	249.99
20200507	MEDICAL & DENTAL SUPPLIES	COVID-19 - SURGICAL MASKS	MCKESSON MEDICAL-SURGICAL INC	18.25
20200507	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 FACES MASKS	MISSOURI VOCATIONAL	1360
20200507	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 MASKS	MAMAS MEND N SEW LLC	628
20200507	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 GLOVES	CARDINAL HEALTH 110 LLC	37.24
20200507	UNIFORMS & CLOTHING	COVID-19-GOWN MATERIAL	PROCUREMENT CARD PAYMENT	337.04
20200507	UNIFORMS & CLOTHING	COVID-19-GOWN MATERIAL	PROCUREMENT CARD PAYMENT	216.51
20200511	MEDICAL & DENTAL SUPPLIES	COVID-19-GLOVES/PPE	MCKESSON MEDICAL-SURGICAL INC	1254
20200511	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	POINT TECHNOLOGY INC	303.2
20200511	UNIFORMS & CLOTHING	COVID-19-20AP FACE COVERS	MISSOURI VOCATIONAL	200
20200512	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE	BRAESIDE HOLDINGS LLC	769500
20200512	MEDICAL & DENTAL SUPPLIES	COVID-19-GLOVES	MCKESSON MEDICAL-SURGICAL INC	1129.8
20200512	MEDICAL & DENTAL SUPPLIES	COVID-19-GLOVES	MCKESSON MEDICAL-SURGICAL INC	1065.4
20200512	MEDICAL & DENTAL SUPPLIES	COVID-19-SHOE COVERS	MCKESSON MEDICAL-SURGICAL INC	202.14
20200512	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	MCKESSON MEDICAL-SURGICAL INC	73

20200512	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE SHIELD/MASK	MCKESSON MEDICAL-SURGICAL INC	35.75
20200512	MEDICAL & DENTAL SUPPLIES	COVID-19-ISOLATIONGOWNS	MCKESSON MEDICAL-SURGICAL INC	32.42
20200512	OTHER ADMINISTRATIVE SUPPLIES	COVID-19-FILTERSFORMASKS	WAL-MART COMMUNITY	63.52
20200512	OTHER ADMINISTRATIVE SUPPLIES	COVID-19-SUPPLIESFORMASKS	SUTHERLAND BUILDING MATERIAL	34.99
20200512	UNIFORMS & CLOTHING	COVID-19 GLOVES DISPLBLE	GRAINGER INDUSTRIAL SUPPLY	64.84
20200512	UNIFORMS & CLOTHING	COVID-19 GLOVES DISPLBLE	GRAINGER INDUSTRIAL SUPPLY	64.84
20200512	UNIFORMS & CLOTHING	COVID-19 GLOVES DISPLBLE	GRAINGER INDUSTRIAL SUPPLY	48.63
20200512	UNIFORMS & CLOTHING	COVID-19 GLOVES DISPOSABL	GRAINGER INDUSTRIAL SUPPLY	17.18
20200513	MEDICAL & DENTAL SUPPLIES	COVID-19-SHOE COVERS/PPE	GRAINGER INDUSTRIAL SUPPLY	689.88
20200513	MEDICAL & DENTAL SUPPLIES	COVID-19-GOGGLES	GRAINGER INDUSTRIAL SUPPLY	424
20200513	MEDICAL & DENTAL SUPPLIES	COVID-19-SAFETY GOGGLES	GRAINGER INDUSTRIAL SUPPLY	311.5
20200513	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	EMS PROFESSIONALS INC	92.5
20200513	OTHER ADMINISTRATIVE SUPPLIES	COVID-19-MATERIALFORMASKS	PROCUREMENT CARD PAYMENT	39.5
20200513	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 - MASK SUPPLIES	PROCUREMENT CARD PAYMENT	27.97
20200514	CLOTHING SUPPLIES	COVID-19 GOWNS	MCKESSON MED SURG GOV SOL LLC	77.82
20200514	CUSTODIAL SUPPLIES	COVID-19-GLOVES	PROCUREMENT CARD PAYMENT	416
20200514	CUSTODIAL SUPPLIES	COVID-19-DISPOSABLE WIPES	PROCUREMENT CARD PAYMENT	227.28
20200514	CUSTODIAL SUPPLIES	COVID-19-SHOE COVERS	PROCUREMENT CARD PAYMENT	188.04
20200514	CUSTODIAL SUPPLIES	COVID-19-SHOE COVERS	PROCUREMENT CARD PAYMENT	101.37
20200514	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	848100
20200514	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE	FASTENAL BRANCH MOJEF	343833.6
20200514	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE	FASTENAL BRANCH MOJEF	278784
20200514	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	MEDLINE INDUSTRIES INC	3407.25
20200514	MEDICAL & DENTAL SUPPLIES	COVID-19 - MASKS,GOWNS,SH	MCKESSON MEDICAL - SURGICAL	591.1
20200514	MEDICAL & DENTAL SUPPLIES	COVID-19-GLOVES	PROCUREMENT CARD PAYMENT	489
20200514	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	300
20200514	MEDICAL & DENTAL SUPPLIES	COVID-19-PPEFORSEMA	PROCUREMENT CARD PAYMENT	190
20200514	MEDICAL & DENTAL SUPPLIES	COVID-19-PPEFORSEMA	PROCUREMENT CARD PAYMENT	178.5
20200514	MEDICAL & DENTAL SUPPLIES	COVID-19 - GOWNS&FACESHLDS	PROCUREMENT CARD PAYMENT	152.67
20200514	MEDICAL & DENTAL SUPPLIES	COVID-19-PPEFORSEMA	PROCUREMENT CARD PAYMENT	148.69
20200514	MEDICAL & DENTAL SUPPLIES	COVID-19-MASKMATE	SCHULTE, RONETTA L	143.29
20200514	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	MEDLINE INDUSTRIES INC	119.33
20200514	MEDICAL & DENTAL SUPPLIES	COVID-19-PPEFORSEMA	PROCUREMENT CARD PAYMENT	98.71
20200514	MEDICAL & DENTAL SUPPLIES	COVID-19-PPEFORSEMA	PROCUREMENT CARD PAYMENT	85.88
20200514	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	MCKESSON MEDICAL-SURGICAL INC	45
20200514	MEDICAL & DENTAL SUPPLIES	COVID-19-PPEFORSEMA	PROCUREMENT CARD PAYMENT	29.9
20200514	MEDICAL & DENTAL SUPPLIES	COVID-19-PPEFORSEMA	PROCUREMENT CARD PAYMENT	27.16
20200514	MEDICAL & DENTAL SUPPLIES	COVID-19-PPEFORSEMA	PROCUREMENT CARD PAYMENT	16.98
20200514	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 PROTECTIVE CAPS	GRAINGER INC	34.02
20200514	OTHER SPECIFIC USE SUPPLIES	COVID-19 ELASTIC FOR MASKS	WAL-MART COMMUNITY	2.91
20200514	UNIFORMS & CLOTHING	COVID-19 PROTECTIVE GLOVES	GRAINGER	89.6
20200514	UNIFORMS & CLOTHING	COVID-19 MASK	NORTHERN SAFETY CO INC	75
20200514	UNIFORMS & CLOTHING	COVID-19 MASK	NORTHERN SAFETY CO INC	70
20200514	UNIFORMS & CLOTHING	COVID-19 MASK	NORTHERN SAFETY CO INC	69.75
20200514	UNIFORMS & CLOTHING	COVID-19 MASK MAT	O'DELL, MAURA D	37.95
20200514	UNIFORMS & CLOTHING	COVID-19 PROTECTIVE GLOVES	GRAINGER	21.24
20200514	UNIFORMS & CLOTHING	COVID-19 PROTECTIVE GLOVES	GRAINGER	19.76
20200514	UNIFORMS & CLOTHING	COVID-19 PROTECTIVE GLOVES	GRAINGER	9.88
20200515	LAW ENFORCEMENT SUPPLIES	COVID-19-SAFETY GLASSES	PROCUREMENT CARD PAYMENT	105.6
20200515	MEDICAL & DENTAL SUPPLIES	COVID-19-GOWNS/PPE	ECLAT COMMERCE INC	750750
20200515	MEDICAL & DENTAL SUPPLIES	COVID-19-GOWNS/PPE	ECLAT COMMERCE INC	551000
20200515	MEDICAL & DENTAL SUPPLIES	COVID-19-GOGGLES	EMS PROFESSIONALS INC	31169.58
20200515	MEDICAL & DENTAL SUPPLIES	COVID-19-GOGGLES S&H	EMS PROFESSIONALS INC	13333.4
20200515	MEDICAL & DENTAL SUPPLIES	COVID-19-GLOVES	PROCUREMENT CARD PAYMENT	1761.8
20200515	MEDICAL & DENTAL SUPPLIES	COVID-19-GLOVES	PROCUREMENT CARD PAYMENT	782.4
20200515	MEDICAL & DENTAL SUPPLIES	COVID-19-GLOVES	PROCUREMENT CARD PAYMENT	416
20200515	MEDICAL & DENTAL SUPPLIES	COVID-19-SAFETY GLASSES	PROCUREMENT CARD PAYMENT	78
20200515	OTHER ADMINISTRATIVE SUPPLIES	COVID-19-FACEMASKMATERIAL	PROCUREMENT CARD PAYMENT	11.87
20200515	OTHER ADMINISTRATIVE SUPPLIES	COVID-19-FACEMASKMATERIAL	PROCUREMENT CARD PAYMENT	-63.52
20200515	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 MASKS	BROWNING, MURANDA K	165
20200515	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 GLOVES	GRAINGER INC	13.75
20200515	UNIFORMS & CLOTHING	COVID-19-FACE MASKS	PROCUREMENT CARD PAYMENT	2692
20200515	UNIFORMS & CLOTHING	COVID-19 RESPIRATOR	LOWES HOME CENTERS INC	88.29
20200515	UNIFORMS & CLOTHING	COVID-19 GLOVES DISPOSBL	GRAINGER INDUSTRIAL SUPPLY	64.84
20200515	UNIFORMS & CLOTHING	COVID-19 GOGGLES	LOWES HOME CENTERS INC	56.96
20200515	UNIFORMS & CLOTHING	COVID-19 COVERALLS	LOWES HOME CENTERS INC	47.4
20200515	UNIFORMS & CLOTHING	COVID-19 FACE SHEILD	LOWES HOME CENTERS INC	30.36
20200515	UNIFORMS & CLOTHING	COVID-19 GLOVES DISPSBLE	LOWES HOME CENTERS INC	29.04
20200515	UNIFORMS & CLOTHING	COVID-19 GLOVES CLEANING	LOWES HOME CENTERS INC	23.22
20200515	UNIFORMS & CLOTHING	COVID-19 GOGGLES	LOWES HOME CENTERS INC	18.03
20200515	UNIFORMS & CLOTHING	COVID-19 COVERALLS	LOWES HOME CENTERS INC	15.19
20200515	UNIFORMS & CLOTHING	COVID-19 GOGGLES	LOWES HOME CENTERS INC	12.4
20200515	UNIFORMS & CLOTHING	COVID-19 GLOVES DISPSBLE	LOWES HOME CENTERS INC	11.91
20200518	CUSTODIAL SUPPLIES	COVID-19-GLOVES	INDUSTRIAL SOAP COMPANY	24
20200518	CUSTODIAL SUPPLIES	COVID-19-GLOVES	INDUSTRIAL SOAP COMPANY	24
20200518	CUSTODIAL SUPPLIES	COVID-19-GLOVES	INDUSTRIAL SOAP COMPANY	2.4
20200518	CUSTODIAL SUPPLIES	COVID-19-GLOVES	INDUSTRIAL SOAP COMPANY	2.4
20200518	CUSTODIAL SUPPLIES	COVID-19-GLOVES	INDUSTRIAL SOAP COMPANY	2.4
20200518	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE	BRAESIDE HOLDINGS LLC	286223.04
20200518	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	MEDLINE INDUSTRIES INC	6004.8
20200518	MEDICAL & DENTAL SUPPLIES	COVID-19 - FACE MASKS	PROCUREMENT CARD PAYMENT	5742
20200518	MEDICAL & DENTAL SUPPLIES	COVID-19 GOGGLES	GRAINGER INDUSTRIAL SUPPLY	1722.8
20200518	MEDICAL & DENTAL SUPPLIES	COVID-19 EXAM GLOVES	MCKESSON MEDICAL-SURGICAL INC	1097.48
20200518	MEDICAL & DENTAL SUPPLIES	COVID-19- GLOVES	MCKESSON MEDICAL-SURGICAL INC	972
20200518	MEDICAL & DENTAL SUPPLIES	COVID-19- GLOVES	MCKESSON MEDICAL-SURGICAL INC	972
20200518	MEDICAL & DENTAL SUPPLIES	COVID-19- GLOVES	MCKESSON MEDICAL-SURGICAL INC	972
20200518	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	MCKESSON MEDICAL-SURGICAL INC	298.56
20200518	MEDICAL & DENTAL SUPPLIES	COVID19 ISOLATION GOWNS	MEDLINE INDUSTRIES INC	279.6



20200518	MEDICAL & DENTAL SUPPLIES	COVID-19 - FACE SHIELDS	PROCUREMENT CARD PAYMENT	254.85
20200518	MEDICAL & DENTAL SUPPLIES	COVID-19 - FACE SHIELDS	PROCUREMENT CARD PAYMENT	237.84
20200518	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS, GOWNS	MCKESSON MEDICAL-SURGICAL INC	131.1
20200518	MEDICAL & DENTAL SUPPLIES	COVID-19 - PPE SUPPLIES	PROCUREMENT CARD PAYMENT	55.67
20200518	MEDICAL & DENTAL SUPPLIES	COVID-19 SHOE COVERS	MCKESSON MEDICAL-SURGICAL INC	51.04
20200518	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS, GOWNS	MCKESSON MEDICAL-SURGICAL INC	25.69
20200518	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS, GOWNS	MCKESSON MEDICAL-SURGICAL INC	25.24
20200518	MEDICAL & DENTAL SUPPLIES	COVID-19 - PPE SUPPLIES	PROCUREMENT CARD PAYMENT	19.98
20200518	MEDICAL & DENTAL SUPPLIES	COVID-19 - FACE MASKS	PROCUREMENT CARD PAYMENT	7.3
20200518	OTHER SPECIFIC USE SUPPLIES	COVID-19 MASK MAKING SUPP	WAL-MART COMMUNITY	424.14
20200518	OTHER SPECIFIC USE SUPPLIES	COVID-19 MASK SUPPLIES	WAL-MART COMMUNITY	189.4
20200518	OTHER SPECIFIC USE SUPPLIES	COVID-19 MASK SUPPLIES	WAL-MART COMMUNITY	133.04
20200518	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE COVERINGS	MISSOURI VOCATIONAL	120
20200518	OTHER SPECIFIC USE SUPPLIES	COVID-19 MASK MAKING SUPP	WAL-MART COMMUNITY	96.2
20200518	OTHER SPECIFIC USE SUPPLIES	COVID-19 MASK MAKING SUPP	WAL-MART COMMUNITY	35.87
20200518	OTHER SPECIFIC USE SUPPLIES	COVID-19 MASK SUPPLIES	WAL-MART COMMUNITY	31.49
20200519	CUSTODIAL SUPPLIES	COVID-19-GLOVES	INDUSTRIAL SOAP COMPANY	48
20200519	CUSTODIAL SUPPLIES	COVID-19-GLOVES	INDUSTRIAL SOAP COMPANY	48
20200519	CUSTODIAL SUPPLIES	COVID-19-GLOVES	INDUSTRIAL SOAP COMPANY	48
20200519	MEDICAL & DENTAL SUPPLIES	COVID19-GOGGLES	IPROMO	179850
20200519	MEDICAL & DENTAL SUPPLIES	COVID-19-SURGICAL MASKS	K & K SUPPLY INC	95000
20200519	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	MEDLINE INDUSTRIES INC	1950
20200519	MEDICAL & DENTAL SUPPLIES	COVID-19- GLOVES	US FOODS INC	744.69
20200519	MEDICAL & DENTAL SUPPLIES	COVID-19-SURGICAL MASKS	K & K SUPPLY INC	250
20200519	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 MASKS	PATTON, RICHARD D	71.96
20200519	OTHER SPECIFIC USE SUPPLIES	COVID- 19 MASKS	MISSOURI VOCATIONAL	300
20200519	UNIFORMS & CLOTHING	COVID-19 - FACE COVERS	MISSOURI VOCATIONAL	300
20200520	MEDICAL & DENTAL SUPPLIES	COVID-19 BATH PPE WIPES	MEDLINE INDUSTRIES INC	3671.47
20200520	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES THERMOMTR	MEDLINE INDUSTRIES INC	1043.5
20200520	UNIFORMS & CLOTHING	COVID-19 PPE	GRAINGER	219.12
20200520	UNIFORMS & CLOTHING	COVID-19 PPE	GRAINGER	176
20200520	UNIFORMS & CLOTHING	COVID-19 PPE	GRAINGER	47.44
20200521	CUSTODIAL SUPPLIES	COVID-19 MASKS, SUPPLIES	MCLAUGHLIN, DAVID W	1865.01
20200521	CUSTODIAL SUPPLIES	COVID-19-GLOVES & WIPES	PROCUREMENT CARD PAYMENT	171.45
20200521	CUSTODIAL SUPPLIES	COVID-19-GLOVES	PROCUREMENT CARD PAYMENT	66.32
20200521	CUSTODIAL SUPPLIES	COVID-19-GLOVES	PROCUREMENT CARD PAYMENT	31.96
20200521	LAW ENFORCEMENT SUPPLIES	COVID-19 SAFETY GLASSES	NU WAY CONCRETE FORMS	1705.05
20200521	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	MISSOURI VOCATIONAL	4000
20200521	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	MISSOURI VOCATIONAL	1720
20200521	MEDICAL & DENTAL SUPPLIES	COVID-19 MASK,SUPPLIES	MCKESSON MEDICAL-SURGICAL INC	628.36
20200521	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	MISSOURI VOCATIONAL	4
20200521	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 MASKS, SUPPLIES	WAL-MART COMMUNITY	734.14
20200521	UNIFORMS & CLOTHING	COVID-19 PROTECTIVE COVERAL	GRAINGER	816.57
20200521	UNIFORMS & CLOTHING	COVID-19 PROTECTIVE GLOVES	GRAINGER	166.28
20200521	UNIFORMS & CLOTHING	COVID-19 PROTECTIVE COVERAL	GRAINGER	112.92
20200521	UNIFORMS & CLOTHING	COVID-19 GLOVES	GRAINGER	24.44
20200521	UNIFORMS & CLOTHING	COVID-19 GLOVES	GRAINGER	23.44
20200522	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHLD	BRAESIDE HOLDINGS LLC	247173.12
20200522	MEDICAL & DENTAL SUPPLIES	COVID-19 SHOE CVR	FASTENAL BRANCH MOJEFF	18288
20200522	MEDICAL & DENTAL SUPPLIES	COVID-19 SHOE CVR	FASTENAL BRANCH MOJEFF	10576.56
20200522	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MEDLINE INDUSTRIES INC	2995.2
20200522	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MEDLINE INDUSTRIES INC	2246.4
20200522	MEDICAL & DENTAL SUPPLIES	COVID-19 MASK MATERIALS	PROCUREMENT CARD PAYMENT	1091.59
20200522	MEDICAL & DENTAL SUPPLIES	COVID-19 ISOLATION GOWNS	MCKESSON MEDICAL-SURGICAL INC	463.85
20200522	MEDICAL & DENTAL SUPPLIES	COVID-19 GOGGLES	GRAINGER INDUSTRIAL SUPPLY	304.4
20200522	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	MEDLINE INDUSTRIES INC	231.82
20200522	MEDICAL & DENTAL SUPPLIES	COVID-19 GOGGLES	MEDLINE INDUSTRIES INC	186.42
20200522	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE MASK	MCKESSON MEDICAL-SURGICAL INC	25.24
20200522	OFFICE SUPPLIES	COVID-19 LATEX GLOVES	BPI SUPPLY	1059.8
20200522	UNIFORMS & CLOTHING	COVID-19 FACE MAS	MSC INDUSTRIAL SUPPLY	8100
20200526	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE	FASTENAL BRANCH MOJEFF	343833.6
20200526	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE	FASTENAL BRANCH MOJEFF	309760
20200526	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE	FASTENAL BRANCH MOJEFF	309760
20200526	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE	FASTENAL BRANCH MOJEFF	248737.28
20200526	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE	FASTENAL BRANCH MOJEFF	34073.6
20200526	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	BOB BARKER COMPANY INC	3978
20200526	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	BOB BARKER COMPANY INC	3978
20200526	MEDICAL & DENTAL SUPPLIES	COVID-19 COVERALLS	MCKESSON MEDICAL - SURGICAL	599.1
20200526	MEDICAL & DENTAL SUPPLIES	MASK RESPIRATORS	MCKESSON MEDICAL - SURGICAL	526.23
20200526	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	MCKESSON MEDICAL-SURGICAL INC	83.12
20200526	MEDICAL & DENTAL SUPPLIES	COVID-19 SHOE COVERS	MCKESSON MEDICAL-SURGICAL INC	68.3
20200526	MEDICAL & DENTAL SUPPLIES	COVID-19-MASKS	MISSOURI VOCATIONAL	60
20200526	MEDICAL & DENTAL SUPPLIES	COVID-19 SURGICAL MASKS	MCKESSON MEDICAL-SURGICAL INC	36.7
20200526	MEDICAL & DENTAL SUPPLIES	COVID-19 SURGICAL MASKS	MCKESSON MEDICAL-SURGICAL INC	25.24
20200526	OFFICE SUPPLIES	COVID-19 GOLVES PROTECTIV	MASSMAN, LANA J	55.96
20200526	OFFICE SUPPLIES	COVID-19-NUMBER KEY PAD	PROCUREMENT CARD PAYMENT	7.63
20200526	UNIFORMS & CLOTHING	COVID-19 DISPOSABLE MASKS	PROCUREMENT CARD PAYMENT	3528
20200526	UNIFORMS & CLOTHING	COVID-19 MASK MATERIAL	PROCUREMENT CARD PAYMENT	341.73
20200526	UNIFORMS & CLOTHING	COVID-19 MASK MATERIALS	PROCUREMENT CARD PAYMENT	323.73
20200526	UNIFORMS & CLOTHING	COVID-19 MASK MATERIALS	PROCUREMENT CARD PAYMENT	288.36
20200526	UNIFORMS & CLOTHING	COVID-19 MASK SUPPLIES	PROCUREMENT CARD PAYMENT	120.96
20200526	UNIFORMS & CLOTHING	COVID-19 MASK SUPPLIES	PROCUREMENT CARD PAYMENT	30
20200526	UNIFORMS & CLOTHING	COVID-19 MASK SUPPLIES	PROCUREMENT CARD PAYMENT	29.94
20200526	UNIFORMS & CLOTHING	COVID-19 MASK SUPPLIES	PROCUREMENT CARD PAYMENT	25
20200526	UNIFORMS & CLOTHING	COVID-19 MASK SUPPLIES	PROCUREMENT CARD PAYMENT	18
20200526	UNIFORMS & CLOTHING	COVID-19 MASK SUPPLIES	PROCUREMENT CARD PAYMENT	17.34
20200526	UNIFORMS & CLOTHING	COVID19-20AP VINYL GLOVES	STAPLES ADVANTAGE	9.82
20200526	UNIFORMS & CLOTHING	COVID-19 MASK SUPPLIES	PROCUREMENT CARD PAYMENT	6.8



20200527	MEDICAL & DENTAL SUPPLIES	COVID19-MISC PPE	EMS PROFESSIONALS INC	2525.57
20200527	UNIFORMS & CLOTHING	COVID-19 SAFETY GLASSES	PROCUREMENT CARD PAYMENT	848.39
20200527	UNIFORMS & CLOTHING	COVID-19-FACEMASKSUPPLIES	PROCUREMENT CARD PAYMENT	232.04
20200527	UNIFORMS & CLOTHING	COVID-19-FACEMASKSUPPLIES	PROCUREMENT CARD PAYMENT	116.61
20200527	UNIFORMS & CLOTHING	COVID-19 CLEAR MASKS	PROCUREMENT CARD PAYMENT	65.99
20200527	UNIFORMS & CLOTHING	COVID-19-FACEMASKSUPPLIES	PROCUREMENT CARD PAYMENT	16
20200527	UNIFORMS & CLOTHING	COVID-19-FACEMASKSUPPLIES	PROCUREMENT CARD PAYMENT	1.99
20200528	CUSTODIAL SUPPLIES	COVID-19-GLOVES,CLEANINGS	PROCUREMENT CARD PAYMENT	131.92
20200528	CUSTODIAL SUPPLIES	COVID-19-GLOVES,CLEANINGS	PROCUREMENT CARD PAYMENT	77.84
20200528	CUSTODIAL SUPPLIES	COVID-19- GLOVES	PROCUREMENT CARD PAYMENT	15.28
20200528	EXPRESS & FREIGHT SERVICES	COVID-19-DISPOSABLEAPRONS	BOB BARKER COMPANY INC	12.61
20200528	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	MEDLINE INDUSTRIES INC	238.66
20200528	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	MEDLINE INDUSTRIES INC	238.66
20200528	OFFICE SUPPLIES	COVID-19-FACE MASKS	MISSOURI VOCATIONAL	1600
20200528	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 COVERALLS	QC SUPPLY LLC	1841.9
20200528	OTHER SPECIFIC USE SUPPLIES	COVID-19-DISPOSABLEAPRONS	BOB BARKER COMPANY INC	8.62
20200528	UNIFORMS & CLOTHING	COVID-19 WC PPE FACEMASK	PROCUREMENT CARD PAYMENT	48.2
20200528	UNIFORMS & CLOTHING	COVID-19-GLOVES	PROCUREMENT CARD PAYMENT	14.94
20200529	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	187.24
20200529	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	55.95
20200529	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	13.99
20200529	MEDICAL & DENTAL SUPPLIES	NITRILE GLOVES	MEDLINE INDUSTRIES INC	1155.08
20200529	MEDICAL & DENTAL SUPPLIES	COVID-19 DISPOSABLE GOWNS	PROCUREMENT CARD PAYMENT	999.5
20200529	MEDICAL & DENTAL SUPPLIES	COVID-19 MASK/FACE SHIELD	PROCUREMENT CARD PAYMENT	996.65
20200529	MEDICAL & DENTAL SUPPLIES	COVID-19 SURGICAL MASKS	PROCUREMENT CARD PAYMENT	867.5
20200529	MEDICAL & DENTAL SUPPLIES	COVID-19- FACE MASKS	MISSOURI VOCATIONAL	120
20200529	MEDICAL & DENTAL SUPPLIES	COVID-19- FACE MASKS	MISSOURI VOCATIONAL	100
20200529	UNIFORMS & CLOTHING	COVID-19 PPE SUPPL	NORTHERN SAFETY CO INC	195.3
20200529	UNIFORMS & CLOTHING	COVID-19 PPE SUPPL	NORTHERN SAFETY CO INC	167.4
20200529	UNIFORMS & CLOTHING	COVID-19 COVERALL PPE	GRAINGER	154.2
20200529	UNIFORMS & CLOTHING	COVID-19 PROTECTIVE CAPS	GRAINGER	34.02
20200601	CUSTODIAL SUPPLIES	COVID-19 CLEAN SUP/PPE	PROCUREMENT CARD PAYMENT	992.16
20200601	CUSTODIAL SUPPLIES	COVID-19 GLOVES/PR SHEET	PROCUREMENT CARD PAYMENT	110.52
20200601	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	99.9
20200601	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	96
20200601	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	73.96
20200601	CUSTODIAL SUPPLIES	COVID-19-GLOVES & MASKS	PROCUREMENT CARD PAYMENT	68.91
20200601	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	66.85
20200601	CUSTODIAL SUPPLIES	COVID-19-GLOVES	PROCUREMENT CARD PAYMENT	63.35
20200601	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	56.72
20200601	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	55.95
20200601	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	53.48
20200601	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	45.96
20200601	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	40.11
20200601	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	39.96
20200601	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	26.74
20200601	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	26.74
20200601	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	13.37
20200601	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	13.29
20200601	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	10.72
20200601	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.04
20200601	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	5.94
20200601	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	4.43
20200601	EXPRESS & FREIGHT SERVICES	COVID-19 SHIP PPE	UNITED PARCEL SERVICE	51.87
20200601	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	MCKESSON MEDICAL-SURGICAL INC	1497.1
20200601	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	1069.2
20200601	OTHER SPECIFIC USE SUPPLIES	COVID-19 - GLOVES	PROCUREMENT CARD PAYMENT	350.46
20200601	OTHER SPECIFIC USE SUPPLIES	COVID-19 - GLOVES	PROCUREMENT CARD PAYMENT	304.67
20200601	UNIFORMS & CLOTHING	COVID-19-FACE MASKS	PROCUREMENT CARD PAYMENT	9255.75
20200601	UNIFORMS & CLOTHING	COVID-19 GLOVES/DISP SPRY	PROCUREMENT CARD PAYMENT	63.93
20200601	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	49.95
20200602	CUSTODIAL SUPPLIES	COVID-19 DISP GLOVES	CHEMSEARCH	423.77
20200602	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	152.16
20200602	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	150.75
20200602	CUSTODIAL SUPPLIES	COVID-19- GLOVES	PROCUREMENT CARD PAYMENT	120.72
20200602	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	99.9
20200602	CUSTODIAL SUPPLIES	COVID 19 PPE	FASTENAL COMPANY	96.55
20200602	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	83.75
20200602	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	71.93
20200602	CUSTODIAL SUPPLIES	COVID-19-GLOVES,CLEANINGS	PROCUREMENT CARD PAYMENT	59.91
20200602	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	55.96
20200602	CUSTODIAL SUPPLIES	COVID-19-GLOVES, CLEANING	PROCUREMENT CARD PAYMENT	43.54
20200602	CUSTODIAL SUPPLIES	COVID 19 PPE	FASTENAL COMPANY	26.74
20200602	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	25.98
20200602	CUSTODIAL SUPPLIES	COVID 19 PPE	FASTENAL COMPANY	20.75
20200602	CUSTODIAL SUPPLIES	COVID 19 PPE	FASTENAL COMPANY	17.84
20200602	CUSTODIAL SUPPLIES	COVID 19 PPE	FASTENAL COMPANY	17.84
20200602	CUSTODIAL SUPPLIES	COVID 19 PPE	FASTENAL COMPANY	17.82
20200602	CUSTODIAL SUPPLIES	COVID-19 - GLOVES	PROCUREMENT CARD PAYMENT	11.4
20200602	CUSTODIAL SUPPLIES	COVID 19 PPE	FASTENAL COMPANY	8.92
20200602	EXPRESS & FREIGHT SERVICES	COVID-19 SHIPMENT OF PPE	UNITED PARCEL SERVICE	309.34
20200602	EXPRESS & FREIGHT SERVICES	COVID-19 SHIPMENT OF PPE	UNITED PARCEL SERVICE	225.55
20200602	EXPRESS & FREIGHT SERVICES	COVID-19 SHIPMENT OF PPE	UNITED PARCEL SERVICE	164.07
20200602	EXPRESS & FREIGHT SERVICES	COVID-19 SHIPMENT OF PPE	UNITED PARCEL SERVICE	118.52
20200602	EXPRESS & FREIGHT SERVICES	COVID-19 SHIPMENT OF PPE	UNITED PARCEL SERVICE	48.01
20200602	MEDICAL & DENTAL EQUIPMENT	COVID-19 MASK OVEN	PROCUREMENT CARD PAYMENT	1381.67
20200602	MEDICAL & DENTAL EQUIPMENT	COVID-19 MASK OVEN	PROCUREMENT CARD PAYMENT	1381.67

20200602	MEDICAL & DENTAL EQUIPMENT	COVID-19 MASK OVEN	PROCUREMENT CARD PAYMENT	1381.66
20200602	MEDICAL & DENTAL SUPPLIES	COVID-19 ALCOHOL/GLOVES	MCKESSON MEDICAL-SURGICAL INC	1273.75
20200602	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	1021.79
20200602	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE/DISINFECTANT	MCKESSON MEDICAL-SURGICAL INC	585.03
20200602	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	MCKESSON MEDICAL-SURGICAL INC	296.17
20200602	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	CONCORDANCE HEALTHCARE	202
20200602	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	48.6
20200602	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS/SANITIZER	MCKESSON MEDICAL-SURGICAL INC	17.54
20200602	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 GOGGLES	GRAINGER INDUSTRIAL SUPPLY	388.75
20200602	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 FACE SHIELDS	MCKESSON MEDICAL-SURGICAL INC	21.75
20200602	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 FACESHIELDS	MCKESSON MEDICAL-SURGICAL INC	21.75
20200602	OTHER SPECIFIC USE SUPPLIES	COVID-19-GLOVES	PROCUREMENT CARD PAYMENT	565.77
20200602	OTHER SPECIFIC USE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	28.49
20200603	CLOTHING SUPPLIES	COVID-19 PPE	OA GENERAL SERVICES - SURPLUS	10
20200603	CUSTODIAL SUPPLIES	COVID-19-GLOVES	PROCUREMENT CARD PAYMENT	248.8
20200603	CUSTODIAL SUPPLIES	COVID-19-GLOVES,DISINFECT	PROCUREMENT CARD PAYMENT	91.82
20200603	CUSTODIAL SUPPLIES	COVID 19 PPE/CLEANING	PROCUREMENT CARD PAYMENT	38.15
20200603	CUSTODIAL SUPPLIES	COVID-19-GLOVES,CLEANINGS	PROCUREMENT CARD PAYMENT	25.36
20200603	CUSTODIAL SUPPLIES	COVID19-NITRILE GLOVES	PROCUREMENT CARD PAYMENT	19.88
20200603	CUSTODIAL SUPPLIES	COVID19-NITRILE GLOVES	PROCUREMENT CARD PAYMENT	17.91
20200603	CUSTODIAL SUPPLIES	COVID 19 GLOVES/SUPPLIES	PROCUREMENT CARD PAYMENT	7.94
20200603	MEDICAL & DENTAL SUPPLIES	COVID19-GOGGLES	IPROMO	372933
20200603	MEDICAL & DENTAL SUPPLIES	COVID-19 REUSABLE GOWNS	MISSOURI VOCATIONAL	702
20200603	MEDICAL & DENTAL SUPPLIES	COVID19-REUSABLE GOWNS	MISSOURI VOCATIONAL	432
20200603	MEDICAL & DENTAL SUPPLIES	COVID-19 COVERALLS	MCKESSON MEDICAL-SURGICAL INC	339.06
20200603	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	MCKESSON MEDICAL - SURGICAL	74.5
20200603	MEDICAL & DENTAL SUPPLIES	COVID19 CAPS	MEDLINE INDUSTRIES INC	58.39
20200603	MEDICAL & DENTAL SUPPLIES	COVID19 CAPS	MEDLINE INDUSTRIES INC	52.89
20200603	OFFICE SUPPLIES	COVID19-GLOVES, SANITIZER	PROCUREMENT CARD PAYMENT	192.36
20200603	OTHER ADMINISTRATIVE SUPPLIES	COVID19 - PPE	PROCUREMENT CARD PAYMENT	16.2
20200603	OTHER EQUIPMENT	COVID-19 PROTECTIVE SHIELD	SCHAFFER SYSTEMS 2018 INC	235.57
20200603	OTHER IN-STATE TRAVEL EXPENSES	COVID-19 MASKS, GLOVES	ROOT, JEFF L	43.06
20200603	OTHER IN-STATE TRAVEL EXPENSES	COVID-19 FACE MASKS	MISSOURI VOCATIONAL	30
20200603	OTHER REPAIR & MAINTENANCE SUPP	COVID 19 GLOVES/SUPPLIES	PROCUREMENT CARD PAYMENT	126.89
20200603	OTHER REPAIR & MAINTENANCE SUPP	COVID-19-GLOVES&DISINFECT	PROCUREMENT CARD PAYMENT	115.38
20200603	OTHER REPAIR & MAINTENANCE SUPP	COVID-19-GLOVES	PROCUREMENT CARD PAYMENT	47.82
20200603	OTHER REPAIR & MAINTENANCE SUPP	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	34.91
20200603	OTHER SPECIFIC USE SUPPLIES	MASK W/FACE SHIELD	POLYMERSHAPES HOLDINGS INC	34170
20200603	UNIFORMS & CLOTHING	COVID-19-PLASTIC GOWNS PPE	JUSTICE FURNITURE MFG CO INC	392.5
20200603	UNIFORMS & CLOTHING	COVID 19 PPE/CLEANING	PROCUREMENT CARD PAYMENT	369.82
20200603	UNIFORMS & CLOTHING	COVID-19 FIT FOR N95 MASKS	COX REGIONAL SERVICES CXH	368.1
20200603	UNIFORMS & CLOTHING	COVID19- MASKS	NORTHERN SAFETY CO INC	350
20200603	UNIFORMS & CLOTHING	COVID19 - MASKS	NORTHERN SAFETY CO INC	124.3
20200603	UNIFORMS & CLOTHING	COVID-19-COVERALLS&GLOVES	PROCUREMENT CARD PAYMENT	116.69
20200603	UNIFORMS & CLOTHING	COVID-19 FACE SHIELD	NORTHERN SAFETY CO INC	77.14
20200603	UNIFORMS & CLOTHING	COVID-19 FACE SHIELD	NORTHERN SAFETY CO INC	77.13
20200603	UNIFORMS & CLOTHING	COVID-19 FACE SHIELD	NORTHERN SAFETY CO INC	77.13
20200603	UNIFORMS & CLOTHING	COVID-19 MASK RESPIRATOR	PROCUREMENT CARD PAYMENT	45
20200603	UNIFORMS & CLOTHING	COVID-19- GLOVES	PROCUREMENT CARD PAYMENT	31.4
20200603	UNIFORMS & CLOTHING	COVID-19 FACE MASKS	MISSOURI VOCATIONAL	30
20200603	UNIFORMS & CLOTHING	COVID-19 RESPIRATOR	PROCUREMENT CARD PAYMENT	29.54
20200604	CUSTODIAL SUPPLIES	COVID-19 LATEX GLOVES	PROCUREMENT CARD PAYMENT	138.58
20200604	CUSTODIAL SUPPLIES	COVID-19-GLOVES	PROCUREMENT CARD PAYMENT	13.37
20200604	MEDICAL & DENTAL SUPPLIES	COVID-19 DIS GOWN	GENTOX MEDICAL SERVICES LLC	3250260
20200604	MEDICAL & DENTAL SUPPLIES	COVID-19 DIS GOWN	GENTOX MEDICAL SERVICES LLC	2321572.5
20200604	MEDICAL & DENTAL SUPPLIES	COVID-19 DIS GOWN	GENTOX MEDICAL SERVICES LLC	1857277.5
20200604	MEDICAL & DENTAL SUPPLIES	COVID-19 DIS GOWN	GENTOX MEDICAL SERVICES LLC	928590
20200604	MEDICAL & DENTAL SUPPLIES	COVID-19 DIS GOWN	GENTOX MEDICAL SERVICES LLC	538590
20200604	MEDICAL & DENTAL SUPPLIES	COVID-19 DIS GOWN	GENTOX MEDICAL SERVICES LLC	390000
20200604	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	1056
20200604	MEDICAL & DENTAL SUPPLIES	COVID-19 MASK FILTERS	PROCUREMENT CARD PAYMENT	97.25
20200604	MEDICAL & DENTAL SUPPLIES	COVID-19 MASK FILTERS	PROCUREMENT CARD PAYMENT	97.24
20200604	OFFICE SUPPLIES	COVID-19-FACE MASKS	MISSOURI VOCATIONAL	40
20200604	OFFICE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	37.22
20200604	OFFICE SUPPLIES	COVID-19 MASK FABRICK	PROCUREMENT CARD PAYMENT	16.76
20200604	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 PPE/GOGGLES COVID	PROCUREMENT CARD PAYMENT	75.99
20200604	OTHER ADMINISTRATIVE SUPPLIES	COVID19 PPE/GOGGLES COVID	PROCUREMENT CARD PAYMENT	75.99
20200604	OTHER ADMINISTRATIVE SUPPLIES	COVID19 PPE/GOGGLES COVID	PROCUREMENT CARD PAYMENT	75.99
20200604	OTHER ADMINISTRATIVE SUPPLIES	COVID19 PPE/GOGGLES COVID	PROCUREMENT CARD PAYMENT	75.99
20200604	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 GLOVES FOR TRASH	TRENTON HARDWARE STORE LLC	59.96
20200604	OTHER ADMINISTRATIVE SUPPLIES	COVID19 PPE/GOGGLES COVID	PROCUREMENT CARD PAYMENT	41.94
20200604	OTHER ADMINISTRATIVE SUPPLIES	COVID19 PPE/GOGGLES COVID	PROCUREMENT CARD PAYMENT	37.1
20200604	OTHER ADMINISTRATIVE SUPPLIES	COVID19 PPE/GOGGLES COVID	PROCUREMENT CARD PAYMENT	22.66
20200604	OTHER ADMINISTRATIVE SUPPLIES	COVID19 PPE/GOGGLES COVID	PROCUREMENT CARD PAYMENT	22.66
20200604	OTHER ADMINISTRATIVE SUPPLIES	COVID19 PPE/GOGGLES COVID	PROCUREMENT CARD PAYMENT	15.99
20200604	OTHER ADMINISTRATIVE SUPPLIES	COVID19 PPE/GOGGLES COVID	PROCUREMENT CARD PAYMENT	13.98
20200604	OTHER ADMINISTRATIVE SUPPLIES	COVID19 PPE/GOGGLES COVID	PROCUREMENT CARD PAYMENT	13.98
20200604	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 COVERALL PPE	QC SUPPLY LLC	178.59
20200604	UNIFORMS & CLOTHING	COVID-19-FACE MASKS-5/4/20	MISSOURI VOCATIONAL	80
20200605	CLOTHING SUPPLIES	COVID-19-MASK MATERIALS	WAL-MART COMMUNITY	668.4
20200605	CLOTHING SUPPLIES	COVID-19-MASK MATERIALS	WAL-MART COMMUNITY	613.11
20200605	CLOTHING SUPPLIES	COVID-19-MASK MATERIALS	WAL-MART COMMUNITY	550.68
20200605	CUSTODIAL SUPPLIES	COVID 19 GLOVES	DOUBLE J AUTO PARTS LLC	45.27
20200605	CUSTODIAL SUPPLIES	COVID-19-GLOVES	PROCUREMENT CARD PAYMENT	36.06
20200605	CUSTODIAL SUPPLIES	COVID 19 GLOVES	DOUBLE J AUTO PARTS LLC	32.79
20200605	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	31.98
20200605	CUSTODIAL SUPPLIES	COVID19 CLEANING/GLOVES	PROCUREMENT CARD PAYMENT	30.65
20200605	CUSTODIAL SUPPLIES	COVID 19 GLOVES	DOUBLE J AUTO PARTS LLC	15.09

20200605	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	GALLS LLC	2587800
20200605	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	MISSOURI VOCATIONAL	244
20200605	OFFICE SUPPLIES	COVID-19 PPE/DISINFECTANT	PROCUREMENT CARD PAYMENT	726.76
20200605	OFFICE SUPPLIES	COVID-19-MED NITRILE GLOVES	PROCUREMENT CARD PAYMENT	44
20200605	OTHER MISCELLANEOUS EXPENSE	COVID-19-FACE MASKS	MOORE, KARIN S	119.97
20200605	OTHER REPAIR & MAINTENANCE SUPP	COVID-19 SAFETY GLASSES	PROCUREMENT CARD PAYMENT	29.79
20200605	OTHER SPECIFIC USE SUPPLIES	COVID-19-FACE MASKS	PROCUREMENT CARD PAYMENT	965
20200605	OTHER SPECIFIC USE SUPPLIES	COVID-19 MASK DISPENSER	GRAINGER INDUSTRIAL SUPPLY	398.58
20200605	UNIFORMS & CLOTHING	COVID 19 GLOVES	WW GRAINGER INC	319.8
20200605	UNIFORMS & CLOTHING	COVID 19 GLOVES	WW GRAINGER INC	319.8
20200605	UNIFORMS & CLOTHING	COVID 19 GLOVES	DOUBLE J AUTO PARTS LLC	30.18
20200608	CUSTODIAL SUPPLIES	COVID-19 BANDANA FOR MASK	PROCUREMENT CARD PAYMENT	42.64
20200608	CUSTODIAL SUPPLIES	COVID-19 GLOVES/CLEAN SUP	PROCUREMENT CARD PAYMENT	42.26
20200608	CUSTODIAL SUPPLIES	COVID-19 BANDANA FOR MASK	PROCUREMENT CARD PAYMENT	40.54
20200608	CUSTODIAL SUPPLIES	COVID-19 BANDANA FOR MASK	PROCUREMENT CARD PAYMENT	35.95
20200608	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	35.68
20200608	CUSTODIAL SUPPLIES	COVID 19 GLOVES	DOUBLE J AUTO PARTS LLC	30.18
20200608	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	26.76
20200608	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	26.76
20200608	CUSTODIAL SUPPLIES	COVID-19 PPE/CLEAN SUP	PROCUREMENT CARD PAYMENT	26.45
20200608	CUSTODIAL SUPPLIES	COVID-19 MASKMAT.	GEMMILL, WALDEN C	22.71
20200608	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	17.84
20200608	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	17.84
20200608	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	17.84
20200608	CUSTODIAL SUPPLIES	COVID-19 MASKMAT,CLEAN 0601	PROCUREMENT CARD PAYMENT	17.65
20200608	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	5.94
20200608	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	0.18
20200608	LABORATORY SUPPLIES	COVID-19- MASKS	PROCUREMENT CARD PAYMENT	2985.75
20200608	OFFICE SUPPLIES	COVID-19 PPE/SANITIZER	PROCUREMENT CARD PAYMENT	16683.33
20200608	OFFICE SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	999.8
20200608	OFFICE SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	999.8
20200608	OFFICE SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	499.9
20200608	OFFICE SUPPLIES	COVID-19 FACE MASKS	MISSOURI VOCATIONAL	200
20200608	OFFICE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	115.6
20200608	OFFICE SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	42.2
20200608	OFFICE SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	42.2
20200608	OFFICE SUPPLIES	COVID-19 MASKMAT.	GEMMILL, WALDEN C	3.97
20200608	OTHER EQUIPMENT	COVID-19 N95MASKFITTESTKITS	MCKESSON MEDICAL - SURGICAL	459.86
20200608	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19-SURGICAL GOWNS	PROCUREMENT CARD PAYMENT	4900
20200608	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 FACE MASKS	MCKESSON MEDICAL-SURGICAL INC	21.75
20200608	OTHER SPECIFIC USE SUPPLIES	COVID-19 GLOVES/PPE	GRAINGER INC	55.88
20200608	OTHER SPECIFIC USE SUPPLIES	COVID-19-NITRILE GLOVES	PROCUREMENT CARD PAYMENT	12.78
20200609	EXPRESS & FREIGHT SERVICES	COVID-19 SHIPPING PPE	UNITED PARCEL SERVICE	418.95
20200609	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	3264
20200609	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	MCKESSON MEDICAL-SURGICAL INC	1305
20200609	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	410.91
20200609	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	122.84
20200609	MEDICAL & DENTAL SUPPLIES	COVID 19 GOGGLES	GRAINGER INDUSTRIAL SUPPLY	60.72
20200609	MEDICAL & DENTAL SUPPLIES	COVID-19-MASKS	MISSOURI VOCATIONAL	40
20200609	MEDICAL & DENTAL SUPPLIES	COVID 19 GOGGLES	GRAINGER INDUSTRIAL SUPPLY	27.24
20200609	OFFICE SUPPLIES	COVID-19 MASKS	MISSOURI VOCATIONAL	1600
20200610	CUSTODIAL SUPPLIES	COVID-19 - FACE MASKS	PROCUREMENT CARD PAYMENT	225.7
20200610	CUSTODIAL SUPPLIES	COVID-19 GLOVES	INDUSTRIAL SOAP COMPANY	144
20200610	CUSTODIAL SUPPLIES	COVID-19 CLNR,GLOVES,BLCH	PROCUREMENT CARD PAYMENT	20.68
20200610	CUSTODIAL SUPPLIES	COVID-19 DISINFECTANT/PPE	PROCUREMENT CARD PAYMENT	12.51
20200610	MEDICAL & DENTAL SUPPLIES	COVID19-ISO GOWNS	ECLAT COMMERCE INC	1678262.5
20200610	MEDICAL & DENTAL SUPPLIES	COVID19-ISO GOWNS	ECLAT COMMERCE INC	1633000
20200610	MEDICAL & DENTAL SUPPLIES	COVID19-ISO GOWNS	ECLAT COMMERCE INC	727750
20200610	MEDICAL & DENTAL SUPPLIES	COVID19-ISO GOWNS	ECLAT COMMERCE INC	390500
20200610	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	MEDLINE INDUSTRIES INC	5148.61
20200610	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	EMS PROFESSIONALS INC	2612.5
20200610	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MEDLINE INDUSTRIES INC	2112
20200610	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	MEDLINE INDUSTRIES INC	1921
20200610	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	MEDLINE INDUSTRIES INC	768.4
20200610	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE STORAGE	MCKESSON MEDICAL-SURGICAL INC	292.6
20200610	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	MEDLINE INDUSTRIES INC	119.33
20200610	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	70.65
20200610	MEDICAL & DENTAL SUPPLIES	COVID-19 MASK N95 BAGS	OFFICE DEPOT-CHICAGO	37.94
20200610	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	30.75
20200610	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE SUPPLIES	PROCUREMENT CARD PAYMENT	25.95
20200610	MEDICAL & DENTAL SUPPLIES	#181047 IHC LARGE NITRILE G	CONCORDANCE HEALTHCARE	17.72
20200610	OFFICE SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	15.8
20200610	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 PPE	MOUND CITY LUMBER CO	39.29
20200610	OTHER SPECIFIC USE SUPPLIES	COVID-19 GLOVES	STAPLES ADVANTAGE	9.78
20200610	UNIFORMS & CLOTHING	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	145
20200610	UNIFORMS & CLOTHING	COVID-19 MASK, HAND SNTZR	PROCUREMENT CARD PAYMENT	95
20200610	UNIFORMS & CLOTHING	COVID-19 MASKS/SANITIZER	PROCUREMENT CARD PAYMENT	78
20200610	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	38.85
20200610	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	29.98
20200611	CUSTODIAL SUPPLIES	COVID-19-SAFETY GLASSES	GRAINGER	176
20200611	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	17.99
20200611	EDUCATION SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	477.7
20200611	EDUCATION SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	338.09
20200611	EDUCATION SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	203.01
20200611	EDUCATION SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	127.28
20200611	EDUCATION SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	62.19
20200611	EDUCATION SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	26.35
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 GOGGLES	FASTENAL COMPANY	532546.56



20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	21210
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	11396
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	7836
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	6471.9
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	5450
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	4860
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	4620
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	4004
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	3888
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	3270
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	2861.1
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	2411.2
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	1346
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	1346
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	545
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	401
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	401
20200611	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	MEDLINE INDUSTRIES INC	119.33
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	PROCUREMENT CARD PAYMENT	59.56
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	48.65
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	35.42
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	PROCUREMENT CARD PAYMENT	30.2
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	7.41
20200611	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	7.41
20200611	OFFICE SUPPLIES	COVID 19 SPRAY/MASKS	CLARK, STACY R	123.92
20200611	OFFICE SUPPLIES	COVID 19 GLOVES/SUPPLIES	PROCUREMENT CARD PAYMENT	87.54
20200611	OFFICE SUPPLIES	COVID 19 GLOVES/SUPPLIES	PROCUREMENT CARD PAYMENT	73.98
20200611	OFFICE SUPPLIES	COVID 19 GLOVES/SUPPLIES	PROCUREMENT CARD PAYMENT	48.88
20200611	OFFICE SUPPLIES	COVID 19 GLOVES/SUPPLIES	PROCUREMENT CARD PAYMENT	35.07
20200611	OFFICE SUPPLIES	COVID 19 GLOVES/SUPPLIES	PROCUREMENT CARD PAYMENT	28.43
20200611	OFFICE SUPPLIES	COVID 19 GLOVES/SUPPLIES	PROCUREMENT CARD PAYMENT	17.99
20200611	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 MASKS, FABRIC	PROCUREMENT CARD PAYMENT	14.86
20200611	UNIFORMS & CLOTHING	COVID-19 - GLOVES	PROCUREMENT CARD PAYMENT	24
20200611	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	-319.9
20200612	CUSTODIAL SUPPLIES	COVID-19 FABRIC FOR MASKS	PROCUREMENT CARD PAYMENT	49.25
20200612	CUSTODIAL SUPPLIES	COVID-19 MASK FABRIC	PROCUREMENT CARD PAYMENT	7.75
20200612	CUSTODIAL SUPPLIES	COVID-19 MASK FABRIC	PROCUREMENT CARD PAYMENT	5.7
20200612	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE MASK	MISSOURI VOCATIONAL	800
20200612	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE MASKS	MISSOURI VOCATIONAL	800
20200612	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES & MASKS	MCKESSON MEDICAL-SURGICAL INC	486.76
20200612	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE MASKS	MISSOURI VOCATIONAL	400
20200612	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE MASKS	MISSOURI VOCATIONAL	400
20200612	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE MASKS	MISSOURI VOCATIONAL	400
20200612	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE MASKS	MISSOURI VOCATIONAL	400
20200612	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE MASKS	MISSOURI VOCATIONAL	400
20200612	MEDICAL & DENTAL SUPPLIES	COVID-19 FACEMASKS	MISSOURI VOCATIONAL	400
20200612	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASKS	NORTHERN SAFETY CO INC	140
20200612	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASKS	NORTHERN SAFETY CO INC	140
20200612	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASKS	NORTHERN SAFETY CO INC	140
20200612	PROMOTIONAL SUPPLIES	COVID-19 FACEMASK	AMERICAN DIVERSITY	10779.79
20200615	CUSTODIAL SUPPLIES	COVID-19 DISFNTN GLOVES	PROCUREMENT CARD PAYMENT	59.88
20200615	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	37.98
20200615	CUSTODIAL SUPPLIES	COVID-19 - GLOVES	PROCUREMENT CARD PAYMENT	26.99
20200615	CUSTODIAL SUPPLIES	COVID-19 - GLOVES	PROCUREMENT CARD PAYMENT	25.78
20200615	CUSTODIAL SUPPLIES	COVID-19 MASK FABRIC	PROCUREMENT CARD PAYMENT	22
20200615	CUSTODIAL SUPPLIES	COVID-19 DISFNT SOP&GLOVS	PROCUREMENT CARD PAYMENT	16.33
20200615	EXPRESS & FREIGHT SERVICES	COVID-19- SHIP FACE MASKS	PROCUREMENT CARD PAYMENT	265.75
20200615	EXPRESS & FREIGHT SERVICES	COVID-19- SHIP FACE MASKS	PROCUREMENT CARD PAYMENT	162.5
20200615	EXPRESS & FREIGHT SERVICES	COVID-19- SHIP FACE MASKS	PROCUREMENT CARD PAYMENT	118.25
20200615	EXPRESS & FREIGHT SERVICES	COVID-19- SHIP FACE MASKS	PROCUREMENT CARD PAYMENT	103.5
20200615	EXPRESS & FREIGHT SERVICES	COVID-19-SHIP DISPOS GOWN	PROCUREMENT CARD PAYMENT	13.95
20200615	LAW ENFORCEMENT SUPPLIES	COVID-19-SAFETY GLASSES	WISE SAFETY& ENVIRONMENTAL	2240
20200615	MEDICAL & DENTAL SUPPLIES	COVID19-GLVOES	XACT XPRESSIONS INC	268750
20200615	MEDICAL & DENTAL SUPPLIES	COVID19-GLVOES	XACT XPRESSIONS INC	256250
20200615	MEDICAL & DENTAL SUPPLIES	COVID19-GLVOES	XACT XPRESSIONS INC	100000
20200615	MEDICAL & DENTAL SUPPLIES	COVID19-FACE MASK	CLEARMASK LLC	50000
20200615	MEDICAL & DENTAL SUPPLIES	COVID19 FACE SHIELDS	MEDICAL SOLUTIONS INC	3077.23
20200615	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	MISSOURI VOCATIONAL	2592
20200615	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	MISSOURI VOCATIONAL	2538
20200615	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	MISSOURI VOCATIONAL	1620
20200615	MEDICAL & DENTAL SUPPLIES	COVID 19 PPE	PROCUREMENT CARD PAYMENT	1329
20200615	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	MEDLINE INDUSTRIES INC	768.4
20200615	MEDICAL & DENTAL SUPPLIES	COVID-19-GOGGLES FOR PPE	GRAINGER INC	558.18
20200615	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	MCKESSON MEDICAL - SURGICAL	467.76
20200615	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	MCKESSON MEDICAL - SURGICAL	461.9
20200615	MEDICAL & DENTAL SUPPLIES	COVID-19-GLOVES	STAPLES ADVANTAGE	440.1
20200615	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	MISSOURI VOCATIONAL	200
20200615	MEDICAL & DENTAL SUPPLIES	COVID-19-GOGGLES FOR PPE	GRAINGER INC	59
20200615	MEDICAL & DENTAL SUPPLIES	COVID-19-GLOVES	STAPLES ADVANTAGE	48.9
20200615	MEDICAL & DENTAL SUPPLIES	COVID-19-GLOVES	STAPLES BUSINESS ADVANTAGE	48.9
20200615	MEDICAL & DENTAL SUPPLIES	COVID-19-GOGGLES FOR PPE	GRAINGER INC	11.8
20200615	OTHER SPECIFIC USE SUPPLIES	COVID 19 PPE	MISSOURI VOCATIONAL	1105.7
20200615	OTHER SPECIFIC USE SUPPLIES	COVID-19-DISPOSABLE CAPS	PROCUREMENT CARD PAYMENT	276.5
20200615	OTHER SPECIFIC USE SUPPLIES	COVID PPE C103035001	MISSOURI VOCATIONAL	40
20200615	UNIFORMS & CLOTHING	COVID-19- FACE MASKS	PROCUREMENT CARD PAYMENT	3891
20200615	UNIFORMS & CLOTHING	COVID-19- FACE MASKS	PROCUREMENT CARD PAYMENT	1969.5
20200615	UNIFORMS & CLOTHING	COVID-19- FACE MASKS	PROCUREMENT CARD PAYMENT	1221.5
20200615	UNIFORMS & CLOTHING	COVID-19- FACE MASKS	PROCUREMENT CARD PAYMENT	1146

20200615	UNIFORMS & CLOTHING	COVID-19-DISPOSABLE GOWNS	PROCUREMENT CARD PAYMENT	300
20200615	UNIFORMS & CLOTHING	COVID-19-COVERALL W/ HOOD	PROCUREMENT CARD PAYMENT	238.35
20200615	UNIFORMS & CLOTHING	COVID-19-SHOE COVERS	PROCUREMENT CARD PAYMENT	114.52
20200615	UNIFORMS & CLOTHING	COVID-19 DISPASBLE GLOVES	PROCUREMENT CARD PAYMENT	92.88
20200616	CUSTODIAL SUPPLIES	COVID-19 CLEANER/GLOVES	PROCUREMENT CARD PAYMENT	219.03
20200616	CUSTODIAL SUPPLIES	COVID-19 CLEANER/GLOVES	PROCUREMENT CARD PAYMENT	92.67
20200616	CUSTODIAL SUPPLIES	COVID-19 - GLOVES	PROCUREMENT CARD PAYMENT	54.8
20200616	CUSTODIAL SUPPLIES	COVID-19-FACESHIELD,GOGGL	PROCUREMENT CARD PAYMENT	46.4
20200616	CUSTODIAL SUPPLIES	COVID-19-GOGGLES	PROCUREMENT CARD PAYMENT	20.97
20200616	CUSTODIAL SUPPLIES	COVID-19-RUBBER GLOVES	PROCUREMENT CARD PAYMENT	17.94
20200616	CUSTODIAL SUPPLIES	COVID-19-RUBBER GLOVES	PROCUREMENT CARD PAYMENT	9.98
20200616	MEDICAL & DENTAL SERVICES	COVID 19 GLOVES	PROCUREMENT CARD PAYMENT	19.83
20200616	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE	BRAESIDE HOLDINGS LLC	807603.84
20200616	MEDICAL & DENTAL SUPPLIES	COVID-19 M GLOVES	GRAINGER	121380
20200616	MEDICAL & DENTAL SUPPLIES	COVID-19 XLGLOVES	GRAINGER	116760
20200616	MEDICAL & DENTAL SUPPLIES	COVID-19 M GLOVES	GRAINGER	75894
20200616	MEDICAL & DENTAL SUPPLIES	COVID-19 XLGLOVES	GRAINGER	58002.3
20200616	MEDICAL & DENTAL SUPPLIES	COVID-19 L GLOVES	GRAINGER	42460
20200616	MEDICAL & DENTAL SUPPLIES	COVID-19-SURGICAL MASKS	PROCUREMENT CARD PAYMENT	10000
20200616	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS/PPE 0605	MISSOURI VOCATIONAL	5818.5
20200616	MEDICAL & DENTAL SUPPLIES	COVID 19 MASKS	MEREDITH DIGITAL INC	2760
20200616	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS/PPE0605	MISSOURI VOCATIONAL	2592
20200616	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS/PPE 0605	MISSOURI VOCATIONAL	2106
20200616	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS/PPE 0605	MISSOURI VOCATIONAL	1620
20200616	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	MISSOURI VOCATIONAL	800
20200616	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	MISSOURI VOCATIONAL	749.25
20200616	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS/PPE 0605	MISSOURI VOCATIONAL	648
20200616	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	MEREDITH DIGITAL INC	470
20200616	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	MEREDITH DIGITAL INC	470
20200616	MEDICAL & DENTAL SUPPLIES	COVID-19 XL GOWNS	MISSOURI VOCATIONAL	405
20200616	MEDICAL & DENTAL SUPPLIES	COVID19 C103035001 MASKS	MISSOURI VOCATIONAL	315
20200616	MEDICAL & DENTAL SUPPLIES	COVID 19 MASKS	MCKESSON MEDICAL-SURGICAL INC	76.52
20200616	MEDICAL & DENTAL SUPPLIES	COVID 19 GOGGLES	GRAINGER INDUSTRIAL SUPPLY	26.4
20200616	MEDICAL & DENTAL SUPPLIES	COVID-19-CR MASKS,THERM	PROCUREMENT CARD PAYMENT	-3933
20200616	MINOR REPAIR, MAINT & IMPROVEMENT SERV	COVID 19 PPE WRHS	FORKLIFTS OF CENTRAL MISSOURI	26559
20200616	MINOR REPAIR, MAINT & IMPROVEMENT SERV	COVID 19 PPE WRHS	FASTENAL COMPANY	241.18
20200616	MINOR REPAIR, MAINT & IMPROVEMENT SERV	COVID 19 GLOVES	GRAINGER	190.48
20200616	MINOR REPAIR, MAINT & IMPROVEMENT SERV	COVID 19 PPE WRHS	AMERIGAS	57.6
20200616	OTHER EQUIPMENT	COVID 19 MASKS	MEREDITH DIGITAL INC	717
20200616	OTHER SPECIFIC USE SUPPLIES	COVID-19-N-95 MASKS	PROCUREMENT CARD PAYMENT	92.74
20200616	UNIFORMS & CLOTHING	COVID19 CLIENT FACE MASKS	DEBRA HURLBURT	723
20200617	CUSTODIAL SUPPLIES	COVID-19 - GLOVES	PROCUREMENT CARD PAYMENT	569.26
20200617	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	82.54
20200617	CUSTODIAL SUPPLIES	COVID-19 GLOVES,CLNG SUPP	PROCUREMENT CARD PAYMENT	53.97
20200617	CUSTODIAL SUPPLIES	COVID-19 - GLOVES	PROCUREMENT CARD PAYMENT	35.96
20200617	CUSTODIAL SUPPLIES	COVID-19 - GLOVES	PROCUREMENT CARD PAYMENT	32.8
20200617	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	11
20200617	CUSTODIAL SUPPLIES	COVID-19 - GLOVES	PROCUREMENT CARD PAYMENT	8.99
20200617	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	BOB BARKER COMPANY INC	65384
20200617	MEDICAL & DENTAL SUPPLIES	COVID-19 MASK FIT	GRAINGER	13979.79
20200617	MEDICAL & DENTAL SUPPLIES	COVID-19 MASK FIT	GRAINGER	10478.16
20200617	MEDICAL & DENTAL SUPPLIES	COVID-19 SHOE COV	FISHER SCIENTIFIC LLC	2412.8
20200617	MEDICAL & DENTAL SUPPLIES	COVID-19 GOGGLES	FISHER SCIENTIFIC LLC	2318.4
20200617	MEDICAL & DENTAL SUPPLIES	COVID-19 MASK FIT	GRAINGER	240.57
20200617	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	FISHER SCIENTIFIC LLC	219.5
20200617	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	FISHER SCIENTIFIC LLC	219.5
20200617	MEDICAL & DENTAL SUPPLIES	COVID-19 MASK FIT	GRAINGER	26.73
20200617	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	5.27
20200617	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	5.27
20200617	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	5.27
20200617	OFFICE SUPPLIES	COVID-19 PPE SUPPLIES	PROCUREMENT CARD PAYMENT	13331.92
20200617	OFFICE SUPPLIES	COVID-19 PPE SUPPLIES	PROCUREMENT CARD PAYMENT	-149.9
20200617	OTHER SPECIFIC USE SUPPLIES	COVID-19 PPE WELCOME CTRS	MISSOURI VOCATIONAL	720
20200617	OTHER SPECIFIC USE SUPPLIES	COVID-19 PPE/MASKS	MISSOURI VOCATIONAL	120
20200618	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	197.37
20200618	CUSTODIAL SUPPLIES	COVID-19- WIPES	MCKESSON MEDICAL - SURGICAL	146.96
20200618	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	127.72
20200618	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	102.34
20200618	CUSTODIAL SUPPLIES	COVID-19-GERMICIDE,GLOVES	PROCUREMENT CARD PAYMENT	94.86
20200618	CUSTODIAL SUPPLIES	COVID-19 GLOVES, CLEANING	PROCUREMENT CARD PAYMENT	90.67
20200618	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	66.84
20200618	CUSTODIAL SUPPLIES	COVID-19-GLOVES	PROCUREMENT CARD PAYMENT	61.49
20200618	CUSTODIAL SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	59.98
20200618	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	41.88
20200618	CUSTODIAL SUPPLIES	COVID-19-GLOVES	OFFICE DEPOT-CINCINNATI	34.08
20200618	CUSTODIAL SUPPLIES	COVID-19-GLOVES	OFFICE DEPOT-CINCINNATI	27.01
20200618	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	24.97
20200618	CUSTODIAL SUPPLIES	COVID-19-GLOVES	OFFICE DEPOT-CINCINNATI	15.7
20200618	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	10.16
20200618	CUSTODIAL SUPPLIES	COVID-19 PPE/HAND CLEANER	PROCUREMENT CARD PAYMENT	8.32
20200618	CUSTODIAL SUPPLIES	COVID-19- GLOVES	OFFICE DEPOT-CINCINNATI	8.19
20200618	FOOD SERVICE SUPPLIES	COVID-19 BAGS/MASKS	PROCUREMENT CARD PAYMENT	569.4
20200618	FOOD SERVICE SUPPLIES	COVID-19- GLOVES	US FOODS INC	113.56
20200618	MEDICAL & DENTAL SUPPLIES	COVID19-MASK	MCKESSON MEDICAL-SURGICAL INC	59600
20200618	MEDICAL & DENTAL SUPPLIES	COVID19-SHOE COVE	SHOE COVER MAGIC INC	28495.21
20200618	MEDICAL & DENTAL SUPPLIES	COVID19-SHOE COVER	PROCUREMENT CARD PAYMENT	6275.88
20200618	MEDICAL & DENTAL SUPPLIES	COVID19-SHOE COVER	PROCUREMENT CARD PAYMENT	5493.33
20200618	MEDICAL & DENTAL SUPPLIES	COVID19-SHOE COVER	PROCUREMENT CARD PAYMENT	2333.34



20200618	MEDICAL & DENTAL SUPPLIES	COVID19-SHOE COVER	PROCUREMENT CARD PAYMENT	2295.72
20200618	MEDICAL & DENTAL SUPPLIES	COVID-19 - MASKS	PROCUREMENT CARD PAYMENT	968.05
20200618	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE DOOR CADDIES	MCKESSON MEDICAL-SURGICAL INC	877.8
20200618	MEDICAL & DENTAL SUPPLIES	COVID-19 - SAFETY GOGGLES	PROCUREMENT CARD PAYMENT	492
20200618	MEDICAL & DENTAL SUPPLIES	COVID-19 - PPE GOWNS	MCKESSON MEDICAL-SURGICAL INC	131.1
20200618	MEDICAL & DENTAL SUPPLIES	COVID-19-RESPIRATORS	PROCUREMENT CARD PAYMENT	119.97
20200618	MEDICAL & DENTAL SUPPLIES	COVID-19-RESPIRATORS	PROCUREMENT CARD PAYMENT	117.97
20200618	MEDICAL & DENTAL SUPPLIES	COVID-19- GLOVES	MCKESSON MEDICAL - SURGICAL	81
20200618	MEDICAL & DENTAL SUPPLIES	COVID-19- GLOVES	MCKESSON MEDICAL-SURGICAL INC	81
20200618	MEDICAL & DENTAL SUPPLIES	COVID-19 - PPE MASKS	MCKESSON MEDICAL-SURGICAL INC	76.52
20200618	MEDICAL & DENTAL SUPPLIES	COVID-19-RESPIRATOR CART.	PROCUREMENT CARD PAYMENT	49.98
20200618	MEDICAL & DENTAL SUPPLIES	COVID-19-RESPIRATOR&GOGGL	PROCUREMENT CARD PAYMENT	29.98
20200618	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	MCKESSON MEDICAL - SURGICAL	10.5
20200618	MEDICAL & DENTAL SUPPLIES	COVID-19- GLOVES	MCKESSON MEDICAL-SURGICAL INC	6.03
20200618	OFFICE SUPPLIES	COVID-19-GLOVES	MCDANIEL, LEANNA J	38.1
20200618	OFFICE SUPPLIES	COVID-19-GLOVES	STAPLES ADVANTAGE	7.7
20200618	OFFICE SUPPLIES	COVID-19-FACE MASKS	STAPLES ADVANTAGE	4.9
20200618	OFFICE SUPPLIES	COVID-19-GLOVES	STAPLES ADVANTAGE	2.08
20200618	OFFICE SUPPLIES	COVID-19-FACE MASKS	STAPLES ADVANTAGE	1.32
20200618	OTHER SPECIFIC USE SUPPLIES	COVID-19-FACE MASK SUPP	PROCUREMENT CARD PAYMENT	254.15
20200618	OTHER SPECIFIC USE SUPPLIES	COVID-19-FACE MASK SUPP	PROCUREMENT CARD PAYMENT	6.88
20200618	UNIFORMS & CLOTHING	COVID-19 PPE/BODY SHIELDS	PROCUREMENT CARD PAYMENT	249.95
20200618	UNIFORMS & CLOTHING	COVID-19 FABRIC FOR MASKS	PROCUREMENT CARD PAYMENT	122.8
20200618	UNIFORMS & CLOTHING	COVID-19 FABRIC FOR MASKS	PROCUREMENT CARD PAYMENT	74.85
20200618	UNIFORMS & CLOTHING	COVID-19 ELASTIC FOR MASK	PROCUREMENT CARD PAYMENT	47.98
20200619	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	141.68
20200619	CUSTODIAL SUPPLIES	COVID-19-GLOVES	PROCUREMENT CARD PAYMENT	109.5
20200619	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	65.75
20200619	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	45.5
20200619	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	8.82
20200619	MEDICAL & DENTAL SUPPLIES	COVID-19 GOGGLES	FASTENAL COMPANY	532546.56
20200619	MEDICAL & DENTAL SUPPLIES	COVID-19 GOGGLES	FASTENAL COMPANY	532546.56
20200619	MEDICAL & DENTAL SUPPLIES	COVID-19 GOGGLES	FASTENAL COMPANY	502676.16
20200619	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE	FASTENAL BRANCH MOJEF	309760
20200619	MEDICAL & DENTAL SUPPLIES	COVID19-FACE MASK	MCKESSON MEDICAL-SURGICAL INC	69170.8
20200619	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	EMS PROFESSIONALS INC	65250
20200619	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	DAKOTA OUTERWEAR COMPANY	57850
20200619	MEDICAL & DENTAL SUPPLIES	COVID19-GOGGLES	IPROMO	28050
20200619	MEDICAL & DENTAL SUPPLIES	COVID19-MASKS	MCKESSON MEDICAL-SURGICAL INC	3097.6
20200619	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	FISHER SCIENTIFIC LLC	1864.8
20200619	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	FISHER SCIENTIFIC LLC	534.4
20200619	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	FISHER SCIENTIFIC LLC	534.4
20200619	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWN, MASK	MCKESSON MEDICAL - SURGICAL	355.75
20200619	MEDICAL & DENTAL SUPPLIES	COVID-19 SAFETY GLASSES	MCKESSON MEDICAL-SURGICAL INC	89.04
20200619	OTHER EQUIPMENT RENTALS	COVID-19 STORAGE-PPE RENTAL	APOLLO PORTA POTTIES & PUMPING	100
20200619	OTHER REPAIR & MAINTENANCE SUPP	COVID-19-GLOVES, BLEACH,	PROCUREMENT CARD PAYMENT	177.08
20200619	OTHER SPECIFIC USE SUPPLIES	COVID-19 GLOVES	FISHER SCIENTIFIC LLC	400.2
20200619	OTHER SPECIFIC USE SUPPLIES	COVID-19 DISINFECTANT/GLO	PROCUREMENT CARD PAYMENT	29.44
20200619	UNIFORMS & CLOTHING	COVID 19 FACE MSK	NORTHERN SAFETY CO INC	2700
20200619	UNIFORMS & CLOTHING	COVID 19 FACE MSK	MISSOURI VOCATIONAL	200
20200622	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	74.99
20200622	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	NMS LLC	3093689.25
20200622	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	NMS LLC	49700.75
20200622	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	WW GRAINGER	14587.36
20200622	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	WW GRAINGER	2529.6
20200622	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	WW GRAINGER	1001.3
20200622	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	WW GRAINGER	827.39
20200622	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	WW GRAINGER	558.62
20200622	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	WW GRAINGER	189.72
20200622	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	WW GRAINGER	158.1
20200622	MEDICAL & DENTAL SUPPLIES	COVID-19 - MASKS	MCKESSON MEDICAL-SURGICAL INC	126.61
20200622	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	WW GRAINGER	126.48
20200622	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	WW GRAINGER	110.67
20200622	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	WW GRAINGER	105.4
20200622	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	WW GRAINGER	84.32
20200622	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	WW GRAINGER	36.89
20200622	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	WW GRAINGER	10.54
20200622	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	WW GRAINGER	10.54
20200622	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	WW GRAINGER	10.54
20200622	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	WW GRAINGER	5.27
20200622	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 GOGGLES	PROCUREMENT CARD PAYMENT	19.96
20200622	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 GOGGLES	PROCUREMENT CARD PAYMENT	9.87
20200622	OTHER SPECIFIC USE SUPPLIES	COVID-19 GLOVES	YOUNG, DEBRA J	17.99
20200622	OTHER SPECIFIC USE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	14.5
20200622	UNIFORMS & CLOTHING	COVID-19 FIT FOR N95 MASKS	COX REGIONAL SERVICES CXH	40.9
20200623	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	126.6
20200623	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	126.6
20200623	CUSTODIAL SUPPLIES	COVID-19 SOAP,WIPES,GLOVE	PROCUREMENT CARD PAYMENT	119.58
20200623	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	103.32
20200623	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	103.32
20200623	MEDICAL & DENTAL SUPPLIES	COVID-19 FACEMASK	MISSOURI VOCATIONAL	23926.4
20200623	MEDICAL & DENTAL SUPPLIES	COVID-19 FACEMASK	MISSOURI VOCATIONAL	8960
20200623	MEDICAL & DENTAL SUPPLIES	COVID-19 FACEMASK	MISSOURI VOCATIONAL	1440
20200623	MEDICAL & DENTAL SUPPLIES	COVID-19 ISOLATION GOWNS	MISSOURI VOCATIONAL	1134
20200623	MEDICAL & DENTAL SUPPLIES	COVID-19 ISOLATION GOWNS	MISSOURI VOCATIONAL	648
20200623	MEDICAL & DENTAL SUPPLIES	COVID-19 ISOLATION GOWNS	MISSOURI VOCATIONAL	486
20200623	MEDICAL & DENTAL SUPPLIES	COVID-19 ISOLATION GOWNS	MISSOURI VOCATIONAL	162

20200623	MEDICAL & DENTAL SUPPLIES	COVID-19 ISOLATION GOWNS	MISSOURI VOCATIONAL	162
20200623	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE SHIELDS	PROCUREMENT CARD PAYMENT	150
20200623	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE MASK	MISSOURI VOCATIONAL	80
20200623	MEDICAL & DENTAL SUPPLIES	COVID-19 CAPS-DISPOSABLE	PROCUREMENT CARD PAYMENT	72.28
20200623	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 SAFETY GLASSES	PROCUREMENT CARD PAYMENT	1063.98
20200623	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 SAFETY GOGGLES	PROCUREMENT CARD PAYMENT	151.98
20200623	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	124
20200623	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	114.1
20200623	OTHER SPECIFIC USE SUPPLIES	COVID-19 GLOVES	FISHER SCIENTIFIC LLC	100.05
20200623	UNIFORMS & CLOTHING	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	845
20200624	CUSTODIAL SUPPLIES	COVID-19 SANITIZER/PPE	PROCUREMENT CARD PAYMENT	146.28
20200624	CUSTODIAL SUPPLIES	COVID 19 GLOVES/CLEANER	PROCUREMENT CARD PAYMENT	69.35
20200624	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	MCKESSON MEDICAL-SURGICAL INC	32400
20200624	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	31100
20200624	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	18682.04
20200624	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	MCKESSON MEDICAL-SURGICAL INC	16200
20200624	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	6804
20200624	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	6214.52
20200624	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	2160.27
20200624	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	MEDLINE INDUSTRIES INC	1903.32
20200624	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	1818
20200624	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	1757.4
20200624	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	1701
20200624	MEDICAL & DENTAL SUPPLIES	COVID-19 FACEMASK	HUBERT COMPANY	1568.7
20200624	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	1279.42
20200624	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	1190.7
20200624	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	1190.7
20200624	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	1122.66
20200624	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE GLOVES	MEDLINE INDUSTRIES INC	713.77
20200624	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	594.66
20200624	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	15.15
20200624	MEDICAL & DENTAL SUPPLIES	COVID-19 CREDIT MEMO-GLOVES	MEDLINE INDUSTRIES INC	-53.77
20200624	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASKS	MISSOURI VOCATIONAL	40
20200624	UNIFORMS & CLOTHING	COVID 19 - GLOVES	GRAINGER	96
20200624	UNIFORMS & CLOTHING	COVID 19 - GLOVES	GRAINGER	89.1
20200625	CLOTHING SUPPLIES	COVID-19 - EXAM GOWNS	MCKESSON MEDICAL-SURGICAL INC	353.1
20200625	CUSTODIAL SUPPLIES	COVID-19 MASKS, SANITIZER	MARTIN, CINDY L	2001.98
20200625	CUSTODIAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL - SURGICAL	435.1
20200625	CUSTODIAL SUPPLIES	COVID-19 GLOVES	INDUSTRIAL SOAP COMPANY	240
20200625	CUSTODIAL SUPPLIES	COVID-19 GLOVES	INDUSTRIAL SOAP COMPANY	240
20200625	CUSTODIAL SUPPLIES	COVID-19 WIPES,GLOVES,SPRAY	WRENFLOW, SHARON K	80.79
20200625	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	38.97
20200625	EXPRESS & FREIGHT SERVICES	COVID-19CS170462002SHIPMASK	UNITED PARCEL SERVICE	443.41
20200625	MEDICAL & DENTAL SUPPLIES	COVID19-FACEMASK	EMS PROFESSIONALS INC	324588.66
20200625	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	GRAINGER	9262.28
20200625	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES,ALCOHOLPADS	MCKESSON MEDICAL-SURGICAL INC	4719.58
20200625	MEDICAL & DENTAL SUPPLIES	COVID-19 ISOLATION GOWNS	MISSOURI VOCATIONAL	3564
20200625	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	K & K SUPPLY INC	2535.3
20200625	MEDICAL & DENTAL SUPPLIES	COVID-19 ISOLATION GOWNS	MISSOURI VOCATIONAL	2106
20200625	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	1291.5
20200625	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE-GLOVES	MEDLINE INDUSTRIES INC	973.44
20200625	MEDICAL & DENTAL SUPPLIES	COVID-19 - PPE SUPPLIES	MCKESSON MEDICAL-SURGICAL INC	392.6
20200625	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE - GLOVES	MEDLINE INDUSTRIES INC	374.4
20200625	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE-GLOVES	MEDLINE INDUSTRIES INC	374.4
20200625	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL - SURGICAL	161.1
20200625	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	OA GENERAL SERVICES - SURPLUS	120
20200625	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	86.1
20200625	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL - SURGICAL	45.75
20200625	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL - SURGICAL	32.4
20200625	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL - SURGICAL	26.84
20200625	MEDICAL & DENTAL SUPPLIES	COVID 19 GLOVES	MCKESSON MEDICAL - SURGICAL	22.32
20200625	OFFICE SUPPLIES	COVID-19 GLOVES	OFFICE DEPOT-CINCINNATI	11.56
20200625	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 FACE SHIELD	PROCUREMENT CARD PAYMENT	23.98
20200625	OTHER EQUIPMENT RENTALS	COVID-19 GLOVES	K & K SUPPLY INC	1034.11
20200625	OTHER EQUIPMENT RENTALS	COVID-19 GLOVES	K & K SUPPLY INC	740.92
20200625	OTHER EQUIPMENT RENTALS	COVID-19 GLOVES	K & K SUPPLY INC	553.73
20200625	OTHER EQUIPMENT RENTALS	COVID-19 GLOVES	K & K SUPPLY INC	480.35
20200625	OTHER EQUIPMENT RENTALS	COVID-19 GLOVES	K & K SUPPLY INC	416.56
20200625	OTHER EQUIPMENT RENTALS	COVID-19 GLOVES	K & K SUPPLY INC	396.75
20200625	OTHER EQUIPMENT RENTALS	COVID-19 GLOVES	K & K SUPPLY INC	344.17
20200625	OTHER EQUIPMENT RENTALS	COVID-19 GLOVES	K & K SUPPLY INC	223.06
20200625	OTHER EQUIPMENT RENTALS	COVID-19 GLOVES	K & K SUPPLY INC	193.5
20200625	OTHER EQUIPMENT RENTALS	COVID-19 GLOVES	K & K SUPPLY INC	41.45
20200625	OTHER EQUIPMENT RENTALS	COVID-19 GLOVES	K & K SUPPLY INC	41.45
20200625	OTHER EQUIPMENT RENTALS	COVID-19 GLOVES	K & K SUPPLY INC	39.73
20200625	OTHER EQUIPMENT RENTALS	COVID-19 GLOVES	K & K SUPPLY INC	22.2
20200625	OTHER EQUIPMENT RENTALS	COVID-19 GLOVES	K & K SUPPLY INC	22.2
20200625	OTHER EQUIPMENT RENTALS	COVID-19 GLOVES	K & K SUPPLY INC	21.28
20200625	OTHER EQUIPMENT RENTALS	COVID-19 GLOVES	K & K SUPPLY INC	19.26
20200625	OTHER EQUIPMENT RENTALS	COVID-19 GLOVES	K & K SUPPLY INC	19.26
20200625	OTHER EQUIPMENT RENTALS	COVID-19 GLOVES	K & K SUPPLY INC	18.46
20200625	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 PPE	PROCUREMENT CARD PAYMENT	374.7
20200625	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 PPE	PROCUREMENT CARD PAYMENT	100.43
20200625	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 PPE	PROCUREMENT CARD PAYMENT	54.39
20200625	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 - MASKS	MCKESSON MEDICAL-SURGICAL INC	38.26
20200625	OTHER REPAIR & MAINTENANCE SUPP	COVID-19 PPE HARDWARE AND F	ULINE INC	30
20200625	OTHER REPAIR & MAINTENANCE SUPP	COVID-19 PPE - WEDGE ANCHOR	LOWES-ATLANTA	20.3
20200625	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASKS	K & K SUPPLY INC	21425

20200625	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASKS	K & K SUPPLY INC	21425
20200625	OTHER SPECIFIC USE SUPPLIES	COVID-19 MASKS	IPROMO	17800
20200625	OTHER SPECIFIC USE SUPPLIES	COVID-19 MASKS	IPROMO	10680
20200625	OTHER SPECIFIC USE SUPPLIES	COVID-19 GLOVES, SHIELDS	PROCUREMENT CARD PAYMENT	216.44
20200625	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASKS	MISSOURI VOCATIONAL	40
20200625	OTHER SPECIFIC USE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	10.21
20200625	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	541.13
20200626	CUSTODIAL SUPPLIES	COVID-19 GLOVES CLEANING	OFFICE DEPOT-CINCINNATI	169.63
20200626	CUSTODIAL SUPPLIES	COVID-19 MASKS	S&S WORLDWIDE	108.81
20200626	CUSTODIAL SUPPLIES	COVID-19 GLOVES	OFFICE DEPOT-CINCINNATI	89.96
20200626	CUSTODIAL SUPPLIES	COVID-19 GLOVES	OFFICE DEPOT-CINCINNATI	57.8
20200626	CUSTODIAL SUPPLIES	COVID-19 GLOVES	OFFICE DEPOT-CINCINNATI	10.22
20200626	CUSTODIAL SUPPLIES	COVID-19 GLOVES	INDUSTRIAL SOAP COMPANY	4.8
20200626	EDUCATION SUPPLIES	COVID-19 MASK SUPPLIES	PROCUREMENT CARD PAYMENT	352.71
20200626	EDUCATION SUPPLIES	COVID-19 MASK SUPPLIES	PROCUREMENT CARD PAYMENT	335.74
20200626	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UNITED PARCEL SERVICE	10492.09
20200626	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UNITED PARCEL SERVICE	4435.07
20200626	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UNITED PARCEL SERVICE	4049.68
20200626	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UNITED PARCEL SERVICE	3791.6
20200626	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	2762.2
20200626	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UNITED PARCEL SERVICE	2212.9
20200626	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	1561.1
20200626	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	949.55
20200626	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	499.38
20200626	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	166.18
20200626	EXPRESS & FREIGHT SERVICES	COVID-19 SHIPPING OF PPE	FEDEX CORPORATE SERVICES	48.11
20200626	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE -GLOVES	MEDLINE INDUSTRIES INC	4950
20200626	MEDICAL & DENTAL SUPPLIES	COVID19-MASK FIT TEST ADAPT	MEDLINE INDUSTRIES INC	3495
20200626	MEDICAL & DENTAL SUPPLIES	COVID19-FACE MASKS	MEDLINE INDUSTRIES INC	2396.4
20200626	MEDICAL & DENTAL SUPPLIES	COVID19-FACE MASKS	MEDLINE INDUSTRIES INC	1797.3
20200626	MEDICAL & DENTAL SUPPLIES	COVID19-FACE MASK	MEDLINE INDUSTRIES INC	1497.75
20200626	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	MEDLINE INDUSTRIES INC	1312.63
20200626	MEDICAL & DENTAL SUPPLIES	COVID19-FACE MASKS	MEDLINE INDUSTRIES INC	1198.2
20200626	MEDICAL & DENTAL SUPPLIES	COVID19-MASK FIT TEST ADAPT	MEDLINE INDUSTRIES INC	838.8
20200626	MEDICAL & DENTAL SUPPLIES	COVID19-FACE MASKS	MEDLINE INDUSTRIES INC	599.1
20200626	MEDICAL & DENTAL SUPPLIES	COVID-19 N95 MASKS&FREIGHT	MEDLINE INDUSTRIES INC	388.27
20200626	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	356.51
20200626	MEDICAL & DENTAL SUPPLIES	COVID19-FACE MASKS	MEDLINE INDUSTRIES INC	299.55
20200626	MEDICAL & DENTAL SUPPLIES	COVID19-FACE MASKS	MEDLINE INDUSTRIES INC	299.55
20200626	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	MEDLINE INDUSTRIES INC	119.33
20200626	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	MEDLINE INDUSTRIES INC	119.33
20200626	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	MEDLINE INDUSTRIES INC	119.33
20200626	OFFICE SUPPLIES	COVID-19 FACE MASKS	CINTAS CORPORATION NO 2	1412.6
20200626	OFFICE SUPPLIES	COVID-19 MASKS	S&S WORLDWIDE	102.5
20200626	OFFICE SUPPLIES	COVID-19 GLOVES	OFFICE DEPOT-CINCINNATI	14.21
20200626	OFFICE SUPPLIES	COVID-19 PPE CONTAINERS	WAL-MART COMMUNITY	11.76
20200626	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 FACE SHIELDS	PROCUREMENT CARD PAYMENT	21.99
20200626	OTHER REPAIR & MAINTENANCE SUPP	COVID-19 GLOVES & FUNNEL	PROCUREMENT CARD PAYMENT	24.85
20200626	OTHER SPECIFIC USE EQUIPMENT	COVID-19 PPE STORAGE BLDG	PROCUREMENT CARD PAYMENT	1887
20200626	OTHER SPECIFIC USE SUPPLIES	COVID-19 GLOVE,SPRYBOTTLE	PROCUREMENT CARD PAYMENT	390.92
20200626	UNIFORMS & CLOTHING	COVID-19 - FACE MASKS	PROCUREMENT CARD PAYMENT	239.76
20200626	UNIFORMS & CLOTHING	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	84.5
20200626	UNIFORMS & CLOTHING	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	84.5
20200626	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	32.97
20200629	CUSTODIAL SUPPLIES	COVID 19 GLOVES	FASTENAL COMPANY	53.5
20200629	CUSTODIAL SUPPLIES	COVID 19 GLOVES	FASTENAL COMPANY	52.98
20200629	CUSTODIAL SUPPLIES	COVID 19 GLOVES	FASTENAL COMPANY	44.6
20200629	CUSTODIAL SUPPLIES	COVID 19 GLOVES	FASTENAL COMPANY	44.6
20200629	CUSTODIAL SUPPLIES	COVID 19 GLOVES	FASTENAL COMPANY	23.76
20200629	CUSTODIAL SUPPLIES	COVID 19 GLOVES	FASTENAL COMPANY	17.84
20200629	CUSTODIAL SUPPLIES	COVID 19 GLOVES	FASTENAL COMPANY	17.84
20200629	CUSTODIAL SUPPLIES	COVID 19 GLOVES	FASTENAL COMPANY	16.72
20200629	CUSTODIAL SUPPLIES	COVID 19 GLOVES	FASTENAL COMPANY	14.86
20200629	CUSTODIAL SUPPLIES	COVID 19 GLOVES	FASTENAL COMPANY	8.92
20200629	CUSTODIAL SUPPLIES	COVID 19 GLOVES	FASTENAL COMPANY	8.92
20200629	EXPRESS & FREIGHT SERVICES	COVID19-PPE FREIGHT	UPS FREIGHT	676.82
20200629	EXPRESS & FREIGHT SERVICES	COVID -SHIPPING PPE KITS	UNITED PARCEL SERVICE	83.86
20200629	EXPRESS & FREIGHT SERVICES	COVID-19 SHIP PPE POLLING	UNITED PARCEL SERVICE	52.3
20200629	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	PROCUREMENT CARD PAYMENT	9800
20200629	MEDICAL & DENTAL SUPPLIES	COVID19-SHOE COVE	SHOE COVER MAGIC INC	9725.91
20200629	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	PROCUREMENT CARD PAYMENT	4100
20200629	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	PROCUREMENT CARD PAYMENT	2500
20200629	MEDICAL & DENTAL SUPPLIES	COVID 19 PPE	PROCUREMENT CARD PAYMENT	1057.88
20200629	MEDICAL & DENTAL SUPPLIES	COVID-19 MASK FABRIC	PROCUREMENT CARD PAYMENT	631.83
20200629	MEDICAL & DENTAL SUPPLIES	COVID-19 FACESHIELDS	MEDLINE INDUSTRIES INC	379.51
20200629	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	PROCUREMENT CARD PAYMENT	22.99
20200629	OFFICE SUPPLIES	COVID-19 MASKS	GRAINGER	53060
20200629	OFFICE SUPPLIES	COVID 19 GLOVES	STAPLES BUSINESS ADVANTAGE	7.7
20200629	OFFICE SUPPLIES	COVID 19 GLOVES	STAPLES BUSINESS ADVANTAGE	7.7
20200629	OFFICE SUPPLIES	COVID 19 GLOVES	STAPLES BUSINESS ADVANTAGE	2.08
20200629	OFFICE SUPPLIES	COVID 19 GLOVES	STAPLES BUSINESS ADVANTAGE	2.08
20200629	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 GOGGLES	PROCUREMENT CARD PAYMENT	59.96
20200629	OTHER MISCELLANEOUS EXPENSE	COVID 19 PPE	MCGUIRE, EMERSON F	73.02
20200629	UNIFORMS & CLOTHING	COVID-19 LATEX GLOVES	ROYAL PAPERS INC	84
20200630	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	104.7
20200630	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	35.5
20200630	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	32.69
20200630	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	17.84



20200630	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	17.82
20200630	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200630	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200630	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200630	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200630	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200630	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200630	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	0.54
20200630	EXPRESS & FREIGHT SERVICES	COVID-19 SHIPPING PPE	UNITED PARCEL SERVICE	157.51
20200630	EXPRESS & FREIGHT SERVICES	COVID-19 SHIP PPE	FEDEX CORPORATE SERVICES	12.83
20200630	EXPRESS & FREIGHT SERVICES	COVID-19 SHPPING PPE	UNITED PARCEL SERVICE	12.82
20200630	EXPRESS & FREIGHT SERVICES	COVID-19 SHIPPING PPE	UNITED PARCEL SERVICE	11.91
20200630	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	EMS PROFESSIONALS INC	43500
20200630	MEDICAL & DENTAL SUPPLIES	3RRK4- GLOVES, NI	GRAINGER	32823.44
20200630	MEDICAL & DENTAL SUPPLIES	2VLY3, GLOVES, NI	GRAINGER	5317.65
20200630	MEDICAL & DENTAL SUPPLIES	COVD19 GLOVES	MEDLINE INDUSTRIES INC	5169.57
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	MISSOURI VOCATIONAL	4860
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	MISSOURI VOCATIONAL	3402
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	MISSOURI VOCATIONAL	2916
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	MISSOURI VOCATIONAL	2916
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	FISHER SCIENTIFIC COMPANY LLC	2605.2
20200630	MEDICAL & DENTAL SUPPLIES	COVD19 GLOVES	MEDLINE INDUSTRIES INC	2179.8
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	2167
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	MISSOURI VOCATIONAL	2025
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	FISHER SCIENTIFIC COMPANY LLC	1864.8
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	MISSOURI VOCATIONAL	1458
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 - GLOVES	MCKESSON MEDICAL-SURGICAL INC	1116.5
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MEDLINE INDUSTRIES INC	973.44
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE/CLEAN SUP	MCKESSON MEDICAL-SURGICAL INC	937.37
20200630	MEDICAL & DENTAL SUPPLIES	COVD19 GLOVES	MEDLINE INDUSTRIES INC	910.22
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 - GLOVES	MCKESSON MEDICAL-SURGICAL INC	891
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	US FOODS	697.86
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	MCKESSON MEDICAL-SURGICAL INC	372.82
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE/SANITIZER	MCKESSON MEDICAL-SURGICAL INC	291.4
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE/WHITE BRDS	STAPLES ADVANTAGE	240.61
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 GOGGLES	MCKESSON MEDICAL-SURGICAL INC	225.1
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES/SANITZER	MCKESSON MEDICAL-SURGICAL INC	188.16
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES SANITIZER	MCKESSON MEDICAL-SURGICAL INC	127.15
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 FACEMASK	MISSOURI VOCATIONAL	120
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	MCKESSON MEDICAL-SURGICAL INC	103.16
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	US FOODS	49.1
20200630	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE MAS	MISSOURI VOCATIONAL	40
20200630	MEDICAL & DENTAL SUPPLIES	COVID19-SEMA PPE	PROCUREMENT CARD PAYMENT	19.29
20200630	OFFICE SUPPLIES	COVID-19 FACE MASKSGLOVES	PROCUREMENT CARD PAYMENT	7497.71
20200630	OFFICE SUPPLIES	COVID-19 GLOVE, SANITIZER	PROCUREMENT CARD PAYMENT	2917.95
20200630	OFFICE SUPPLIES	COVID-19 CLEAN SUPP, GLVS	STRAUCH, JENNIFER J	29.9
20200630	OFFICE SUPPLIES	COVID-19 CLEAN SUPP, GLVS	GRAVES, CAROL	23.8
20200630	OFFICE SUPPLIES	COVID-19 GLOVES	NEWHAM, CARA L	21.67
20200630	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 FACEMASK	ARAMARK CORPORATION	4480
20200630	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 FACEMASK DISPENS	GRAINGER INDUSTRIAL SUPPLY	400.95
20200630	OTHER SPECIFIC USE SUPPLIES	COVID-19 CLEANING SUP/PPE	PROCUREMENT CARD PAYMENT	230.23
20200630	OTHER SPECIFIC USE SUPPLIES	COVID19 FACE MASKS	MISSOURI VOCATIONAL	200
20200630	UNIFORMS & CLOTHING	COVID-19 PPE/MASKS	PROCUREMENT CARD PAYMENT	161.54
20200630	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	8.02
20200707	CUSTODIAL SUPPLIES	COVID-19 SHIELDS/DISFCT	PROCUREMENT CARD PAYMENT	283.96
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 SHIELDS/DISFCT	PROCUREMENT CARD PAYMENT	2969.7
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MEDLINE INDUSTRIES INC	1760
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES,MASKS,ALC	MCKESSON MEDICAL-SURGICAL INC	1487.23
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS, WIPES,	MCKESSON MEDICAL-SURGICAL INC	1413.98
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES, MASKS	MCKESSON MEDICAL-SURGICAL INC	1207.67
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 SHIELDS/DISFCT	PROCUREMENT CARD PAYMENT	1056.97
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 - PPE SUPPLIES	MCKESSON MEDICAL-SURGICAL INC	1018.36
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	MCKESSON MEDICAL-SURGICAL INC	936.12
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	784.4
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES & MASKS	MCKESSON MEDICAL-SURGICAL INC	651.5
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE SHIELDS	INDUSTRIAL SOAP COMPANY	621
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	614.8
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVE/SANITIZER	MCKESSON MEDICAL-SURGICAL INC	526.75
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES/SANITIZER	MCKESSON MEDICAL-SURGICAL INC	526.75
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 SHOE COVERS	MEDLINE INDUSTRIES INC	179.99
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	170.1
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	169.6
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	137.7
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 - GLOVES	MCKESSON MEDICAL-SURGICAL INC	121.95
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	46.72
20200707	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	33.83
20200707	OFFICE SUPPLIES	COVID-19 GLVS, HAND SANIT	PROCUREMENT CARD PAYMENT	34.78
20200707	OFFICE SUPPLIES	COVID-19 GLVS, HAND SANIT	PROCUREMENT CARD PAYMENT	29.79
20200707	OFFICE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	25.99
20200707	OFFICE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	19.96
20200707	OFFICE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	17.82
20200707	OFFICE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	14.57
20200707	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 - GLOVES	PROCUREMENT CARD PAYMENT	229.4
20200707	OTHER SPECIFIC USE SUPPLIES	COVID-19 PPE SUPPLIES	PROCUREMENT CARD PAYMENT	1688.3
20200707	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASKS	MISSOURI VOCATIONAL	30
20200707	OTHER SPECIFIC USE SUPPLIES	COVID-19 SAFETY GLASSES	GRAINGER INDUSTRIAL SUPPLY	27.89
20200707	OTHER SPECIFIC USE SUPPLIES	COVID-19 SAFETY GLASSES	GRAINGER INDUSTRIAL SUPPLY	27.89
20200707	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASKS	MISSOURI VOCATIONAL	10

20200707	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASKS	MISSOURI VOCATIONAL	9.2
20200707	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASKS	MISSOURI VOCATIONAL	6
20200707	UNIFORMS & CLOTHING	COVID-19 MASKS,GLOVES,WIP	PROCUREMENT CARD PAYMENT	286.14
20200707	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	159.04
20200707	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	119.37
20200707	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	63.98
20200707	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	21
20200707	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	5.61
20200707	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	5.61
20200707	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	5.61
20200709	CUSTODIAL SUPPLIES	COVID-19 GLOVES,SANITIZER	DNR STATE PARKS	193.68
20200709	CUSTODIAL SUPPLIES	COVID-19 GLOVES, SOAP	DNR STATE PARKS	108.4
20200709	CUSTODIAL SUPPLIES	COVID-19 GLOVES	DNR STATE PARKS	30.11
20200709	EXPRESS & FREIGHT SERVICES	COVID-19 SHIPPING PPE	UNITED PARCEL SERVICE	19.59
20200709	EXPRESS & FREIGHT SERVICES	COVID-19 SHIPPING PPE	UNITED PARCEL SERVICE	16.24
20200709	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 SAFETY GLASSES	DNR STATE PARKS	6.16
20200709	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 FACESHEILD,GLOVE	DNR STATE PARKS	5
20200710	CUSTODIAL SUPPLIES	COVID-19 GLOVES	DNR STATE PARKS	24.21
20200710	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 GLOVES	DNR STATE PARKS	51.51
20200710	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 FACESHIELD	DNR STATE PARKS	21.48
20200710	UNIFORMS & CLOTHING	COVID-19 NITRILE GLOVES	PROCUREMENT CARD PAYMENT	19.35
20200713	CUSTODIAL SUPPLIES	COVID-19 LATEX GLOVES	DNR STATE PARKS	298.59
20200713	CUSTODIAL SUPPLIES	COVID-19 BLEACH, GLOVES,	DNR STATE PARKS	114.21
20200713	CUSTODIAL SUPPLIES	COVID-19 GLOVES,SANITIZER	DNR STATE PARKS	87.87
20200713	CUSTODIAL SUPPLIES	COVID-19 GLOVES	DNR STATE PARKS	64.56
20200713	CUSTODIAL SUPPLIES	COVID-19 GLOVES	DNR STATE PARKS	48.42
20200713	CUSTODIAL SUPPLIES	COVID-19 GLOVES, APRONS,	DNR STATE PARKS	13.8
20200713	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 FACE SHIELDS	PROCUREMENT CARD PAYMENT	996.96
20200713	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	526.2
20200713	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 SAFETY GLASSES	PROCUREMENT CARD PAYMENT	143.88
20200713	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 SAFETY GOGGLES	PROCUREMENT CARD PAYMENT	107.96
20200713	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 FACE SHIELDS	DNR STATE PARKS	101.58
20200713	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 NITRILE GLOVES	PROCUREMENT CARD PAYMENT	62.37
20200713	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	35.88
20200713	OTHER SPECIFIC USE SUPPLIES	COVID-19 RUBBER GLOVES	PROCUREMENT CARD PAYMENT	2251
20200714	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	161.5
20200714	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 GOGGLES/CLEANING	PROCUREMENT CARD PAYMENT	23.92
20200715	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	15.94
20200715	OFFICE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	138.24
20200715	OFFICE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	94.38
20200715	OFFICE SUPPLIES	COVID-19 MASKS	FRANKLIN, SANDRA	33.95
20200715	OTHER SPECIFIC USE SUPPLIES	COVID-19 WIPES, FACE CVRS	PROCUREMENT CARD PAYMENT	242.05
20200715	OTHER SPECIFIC USE SUPPLIES	COVID-19 FCECVRNG&WHLCVR	PROCUREMENT CARD PAYMENT	80.98
20200715	OTHER SPECIFIC USE SUPPLIES	COVID-19 MASKING TAPE	PROCUREMENT CARD PAYMENT	54.6
20200716	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	82.84
20200716	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	59.94
20200716	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	17.94
20200716	MEDICAL & DENTAL SUPPLIES	FY20 COVID19-SHOE COVERS	SHOE COVER MAGIC INC	9725.91
20200716	OTHER SPECIFIC USE SUPPLIES	COVID-19 GLOVES/APRONS	PROCUREMENT CARD PAYMENT	3721.25
20200716	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE SHIELDS	PROCUREMENT CARD PAYMENT	829.94
20200716	OTHER SPECIFIC USE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	134.75
20200716	OTHER SPECIFIC USE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	27.98
20200716	UNIFORMS & CLOTHING	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	17.99
20200717	CUSTODIAL SUPPLIES	COVID-19 TWLS,GLOVES,SPRY	PROCUREMENT CARD PAYMENT	263.32
20200717	CUSTODIAL SUPPLIES	COVID-19 - GLOVES	DNR STATE PARKS	194.95
20200717	CUSTODIAL SUPPLIES	COVID-19 - GLOVES	DNR STATE PARKS	80.7
20200717	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	37.98
20200717	CUSTODIAL SUPPLIES	COVID-19 GLOVES/HAND SANI	DNR STATE PARKS	32.28
20200717	CUSTODIAL SUPPLIES	COVID-19 - GLOVES/APRONS/	DNR STATE PARKS	21.96
20200717	CUSTODIAL SUPPLIES	COVID-19 DIS GLVS.DISNFTN	DNR STATE PARKS	20.77
20200717	CUSTODIAL SUPPLIES	COVID-19 CHEMICAL GLOVES	DNR STATE PARKS	2.78
20200717	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE SHIELDS	PROCUREMENT CARD PAYMENT	3000
20200717	MEDICAL & DENTAL SUPPLIES	COVID-19 SURGICAL MASKS	PROCUREMENT CARD PAYMENT	1828.9
20200717	MEDICAL & DENTAL SUPPLIES	COVID-19 SANTIZER, MASKS	MISSOURI VOCATIONAL	120
20200717	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	PROCUREMENT CARD PAYMENT	89.97
20200717	MEDICAL & DENTAL SUPPLIES	COVID-19 MASK SUPPLIES	PROCUREMENT CARD PAYMENT	18.98
20200717	MEDICAL & DENTAL SUPPLIES	COVID-19 CR MASK SUPPLIES	PROCUREMENT CARD PAYMENT	-161.46
20200717	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 GLOVES/BIB APRON	DNR STATE PARKS	177
20200717	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 GOGGLES, PROTECT	PROCUREMENT CARD PAYMENT	13.69
20200717	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 FACE SHEILD	DNR STATE PARKS	10
20200717	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 SAFETY GLASSES	DNR STATE PARKS	8.52
20200717	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 GLOVES/SAFETY GL	DNR STATE PARKS	8.28
20200717	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	5.54
20200717	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 MASK MATERIALS	PROCUREMENT CARD PAYMENT	1691.4
20200717	OTHER SPECIFIC USE SUPPLIES	COVID-19 SANITIZER, MASKS	PROCUREMENT CARD PAYMENT	6745.33
20200717	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	3037
20200717	UNIFORMS & CLOTHING	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	676.64
20200717	UNIFORMS & CLOTHING	COVID-19 SAFETY GLASSES	PROCUREMENT CARD PAYMENT	245.62
20200717	UNIFORMS & CLOTHING	COVID-19 BANDANA/FACEMASK	PROCUREMENT CARD PAYMENT	168.91
20200717	UNIFORMS & CLOTHING	COVID-19 GAITERS/FACEMASK	PROCUREMENT CARD PAYMENT	149.9
20200717	UNIFORMS & CLOTHING	COVID-19 BANDANA/FACEMASK	PROCUREMENT CARD PAYMENT	104.93
20200717	UNIFORMS & CLOTHING	COVID-19 BANDANA/FACEMASK	PROCUREMENT CARD PAYMENT	75.92
20200717	UNIFORMS & CLOTHING	20 COVID-19 GLOVES DISPOSAB	GRAINGER INDUSTRIAL SUPPLY	33.66
20200720	CLOTHING SUPPLIES	20 COVID-19 GOWN MATERIAL	WAL-MART COMMUNITY	591.81
20200720	CLOTHING SUPPLIES	20 COVID-19 GOWN MATERIAL	WAL-MART COMMUNITY	535.64
20200720	CLOTHING SUPPLIES	20 COVID-19 GOWN MATERIAL	WAL-MART COMMUNITY	458.7
20200720	MEDICAL & DENTAL SUPPLIES	20 COVID-19 GOWNS/PPE GEAR	MEDLINE INDUSTRIES INC	702
20200720	MEDICAL & DENTAL SUPPLIES	20 COVID-19 CAPS/PPE GEAR	MEDLINE INDUSTRIES INC	542.25



20200720	MEDICAL & DENTAL SUPPLIES	20 COVID-19 HAIR CAP/PPE	MEDLINE INDUSTRIES INC	46.88
20200720	MEDICAL & DENTAL SUPPLIES	COVID-19 CREDIT MASKS	PROCUREMENT CARD PAYMENT	-21.19
20200720	OTHER ASSISTANCE PAYMENTS	20 COVID-19 MED SUPP/PPE	TRI-COUNTY CARE CENTER	22568.26
20200720	OTHER ASSISTANCE PAYMENTS	20 COVID-19 GLOVES,GOWNS	SENATH SOUTH HEALTH CARE CENTE	21432.95
20200720	OTHER ASSISTANCE PAYMENTS	20 COVID19 GLOVES,MASK,THER	CLARK COUNTY NURSING HOME	3932.9
20200720	OTHER RESIDENTIAL SUPPLIES	COVID-19 STORAGE FOR PPE	PROCUREMENT CARD PAYMENT	25.87
20200720	UNIFORMS & CLOTHING	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	6458.4
20200721	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	41.62
20200721	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	35.68
20200721	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	35.66
20200721	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	31.21
20200721	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	26.76
20200721	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	26.76
20200721	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	23.78
20200721	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	18.76
20200721	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	17.84
20200721	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	11.88
20200721	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200721	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200721	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	5.94
20200721	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	5.94
20200721	MEDICAL & DENTAL SUPPLIES	COVID-19 - GLOVES	PROCUREMENT CARD PAYMENT	1011.33
20200721	MEDICAL & DENTAL SUPPLIES	COVID-19 - FACE MASKS	PROCUREMENT CARD PAYMENT	300.82
20200721	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 COVERALLS	QC SUPPLY LLC	1250.25
20200721	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	328.57
20200721	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	116.93
20200721	UNIFORMS & CLOTHING	COVID-19 MASKS, SANITIZER	FASTENAL COMPANY	1387.98
20200722	CLOTHING SUPPLIES	COVID-19 - PATIENT GOWNS	MCKESSON MEDICAL-SURGICAL INC	441.41
20200722	CUSTODIAL SUPPLIES	COVID-19 - GLOVES	PROCUREMENT CARD PAYMENT	59.88
20200722	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UPS FREIGHT	3513.79
20200722	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	314.79
20200722	UNIFORMS & CLOTHING	COVID-19 MASKS	MISSOURI VOCATIONAL	4000
20200722	UNIFORMS & CLOTHING	COVID-19 - MASKS/GLOVES	PROCUREMENT CARD PAYMENT	86.38
20200723	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	7165.54
20200723	MEDICAL & DENTAL SUPPLIES	20 COVID-19 FACE MASKS	MISSOURI VOCATIONAL	4000
20200723	MEDICAL & DENTAL SUPPLIES	20 COVID-19 FACE MASKS	MISSOURI VOCATIONAL	2000
20200723	MEDICAL & DENTAL SUPPLIES	20 COVID19 GLOVES	GRAINGER	106.05
20200724	UNIFORMS & CLOTHING	21 COVID-19 KN-95 MASKS	MEDICAL SOLUTIONS INC	5922.49
20200727	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UPS FREIGHT	591.69
20200727	MEDICAL & DENTAL SUPPLIES	21 COVID-19 MASKS	GALLS LLC	2563800
20200727	OTHER ASSISTANCE PAYMENTS	20 COVID19 HAZPAY/PPE/FUEL	SIRO OP OAKWOOD LLC	130050.04
20200727	OTHER ASSISTANCE PAYMENTS	20 COVID19 COMBATPAY&PPE	NHC HEALTHCARE-JOPLIN	44665.53
20200727	OTHER ASSISTANCE PAYMENTS	20 COVID-19 STAFF & PPESUPP	SRZ OP VALLEY VIEW LLC	35334.34
20200728	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	12.78
20200728	MEDICAL & DENTAL SUPPLIES	20 COVID-19 GLOVES	GRAINGER INDUSTRIAL SUPPLY	2588.76
20200728	MEDICAL & DENTAL SUPPLIES	20 COVID-19 FACE MASKS	MCKESSON MEDICAL - SURGICAL	51.62
20200728	MEDICAL & DENTAL SUPPLIES	20 COVID19 GLOVE C115144003	STAPLES ADVANTAGE	34.09
20200728	MEDICAL & DENTAL SUPPLIES	20 COVID19 GLOVE C115144003	STAPLES ADVANTAGE	8.81
20200728	MEDICAL & DENTAL SUPPLIES	20 COVID19 GLOVE C115144003	STAPLES ADVANTAGE	6.91
20200728	OFFICE SUPPLIES	20 COVID-19 DIS FACE MASKS	CITY OF SPRINGFIELD-DEPARTMENT	95.97
20200728	OTHER SPECIFIC USE SUPPLIES	COVID-19 PONCHOS/PPE	PROCUREMENT CARD PAYMENT	198.5
20200729	CUSTODIAL SUPPLIES	COVID-19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	951.66
20200729	CUSTODIAL SUPPLIES	COVID-19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	390.46
20200729	CUSTODIAL SUPPLIES	COVID-19 FACE SHIELDS	PROCUREMENT CARD PAYMENT	204
20200729	CUSTODIAL SUPPLIES	COVID-19 SPRY BOTTLE,MASK	PROCUREMENT CARD PAYMENT	85.68
20200729	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	62.41
20200729	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	56.52
20200729	CUSTODIAL SUPPLIES	COVID-19 GLOVES&SANITIZER	PROCUREMENT CARD PAYMENT	48.72
20200729	CUSTODIAL SUPPLIES	COVID-19 FACE SHIELDS	PROCUREMENT CARD PAYMENT	29.72
20200729	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UPS FREIGHT	3812.3
20200729	LAW ENFORCEMENT SUPPLIES	COVID-19 PPE FREIGHT	3SOUTH LLC	736.83
20200729	MEDICAL & DENTAL SUPPLIES	FY20 COVID19-PPE	MEDLINE INDUSTRIES INC	38028
20200729	MEDICAL & DENTAL SUPPLIES	FY20 COVID19-PPE	MEDLINE INDUSTRIES INC	37932.93
20200729	MEDICAL & DENTAL SUPPLIES	FY20 COVID19-PPE	MEDLINE INDUSTRIES INC	4180.02
20200729	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MEDLINE INDUSTRIES INC	2179.8
20200729	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MEDLINE INDUSTRIES INC	1193.3
20200729	MEDICAL & DENTAL SUPPLIES	FY20 COVID19-PPE	MEDLINE INDUSTRIES INC	715.98
20200729	MEDICAL & DENTAL SUPPLIES	FY20 COVID19-PPE	MEDLINE INDUSTRIES INC	477.32
20200729	MEDICAL & DENTAL SUPPLIES	FY20 COVID19-PPE	MEDLINE INDUSTRIES INC	357.99
20200729	MEDICAL & DENTAL SUPPLIES	FY20 COVID19-PPE	MEDLINE INDUSTRIES INC	357.99
20200729	MEDICAL & DENTAL SUPPLIES	FY20 COVID19-PPE	MEDLINE INDUSTRIES INC	357.99
20200729	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MEDLINE INDUSTRIES INC	357.99
20200729	MEDICAL & DENTAL SUPPLIES	FY20 COVID19-PPE	MEDLINE INDUSTRIES INC	119.33
20200729	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MEDLINE INDUSTRIES INC	119.33
20200729	OTHER SPECIFIC USE SUPPLIES	COVID-19 TRANSPORTBAG PPE	PROCUREMENT CARD PAYMENT	171.96
20200729	OTHER SPECIFIC USE SUPPLIES	COVID-19 TRANSPORTBAG PPE	PROCUREMENT CARD PAYMENT	39
20200729	UNIFORMS & CLOTHING	COVID-19 - N95 MASKS	PROCUREMENT CARD PAYMENT	3000
20200730	MEDICAL & DENTAL SUPPLIES	FY20 COVID19-SHOE COVERS	PROCUREMENT CARD PAYMENT	2056.2
20200730	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	CONCORDANCE HEALTHCARE	17.72
20200730	OTHER SPECIFIC USE SUPPLIES	COVID-19 PPE WRHS-PALLET CR	ULINE INC	4379.31
20200731	BUILDING/STORAGE/STRUCTURE LEASES, OPER	COVID-19-PPE WAREHOUSE	INDUSTRIAL WAREHOUSE &	-67500
20200731	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	56.7
20200731	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	34.13
20200731	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	26.94
20200731	ENGINEERING & TECHNICAL SUPPLIES	COVID-19 DISPOSABLE MASKS	PROCUREMENT CARD PAYMENT	20.99
20200731	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	-124.64
20200731	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	-374.54

20200731	EXPRESS & FREIGHT SERVICES	COVID19-PPE FREIGHT	UPS FREIGHT	-507.62
20200731	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	-712.16
20200731	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	-1170.83
20200731	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UNITED PARCEL SERVICE	-1659.68
20200731	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	-2071.65
20200731	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UNITED PARCEL SERVICE	-2843.7
20200731	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UNITED PARCEL SERVICE	-3037.26
20200731	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UNITED PARCEL SERVICE	-3326.3
20200731	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UNITED PARCEL SERVICE	-7869.07
20200731	MEDICAL & DENTAL SUPPLIES	20COVID19 ISO GOWNS PPE C19	A-1 TEXTILES	14598.18
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES,SANITIZER	MCKESSON MEDICAL-SURGICAL INC	689.58
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES & MASKS	MCKESSON MEDICAL-SURGICAL INC	347.54
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-PPEFORSEMA	PROCUREMENT CARD PAYMENT	-12.74
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-SEMA PPE	PROCUREMENT CARD PAYMENT	-14.47
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-PPEFORSEMA	PROCUREMENT CARD PAYMENT	-20.37
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-PPEFORSEMA	PROCUREMENT CARD PAYMENT	-22.43
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-SHOE COVERS	GRAINGER	-23.1
20200731	MEDICAL & DENTAL SUPPLIES	MEDICAL EQUIPMENT AND ACCESS00	MCKESSON MEDICAL-SURGICAL INC	-55.02
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-PPEFORSEMA	PROCUREMENT CARD PAYMENT	-64.41
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 001	EMS PROFESSIONALS INC	-69.38
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-PPEFORSEMA	PROCUREMENT CARD PAYMENT	-74.03
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 002	MEDLINE INDUSTRIES INC	-89.5
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 002	MEDLINE INDUSTRIES INC	-89.5
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 002	MEDLINE INDUSTRIES INC	-89.5
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 002	MEDLINE INDUSTRIES INC	-89.5
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 002	MEDLINE INDUSTRIES INC	-89.5
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-PPEFORSEMA	PROCUREMENT CARD PAYMENT	-111.52
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	-126
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	-126
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	-126
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-PPEFORSEMA	PROCUREMENT CARD PAYMENT	-133.88
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-SHOE COVERS	GRAINGER	-138.6
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-PPEFORSEMA	PROCUREMENT CARD PAYMENT	-142.5
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 002	MEDLINE INDUSTRIES INC	-179
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 002	MEDLINE INDUSTRIES INC	-179
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-SURGICAL MASKS	K & K SUPPLY INC	-187.5
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE MASKS 001	MEDLINE INDUSTRIES INC	-224.66
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE MASKS 001	MEDLINE INDUSTRIES INC	-224.66
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	-225
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	-225
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-SHOE COVERS	GRAINGER	-231
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-SEMA PPE	PROCUREMENT CARD PAYMENT	-359.91
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE MASKS 003	MEDLINE INDUSTRIES INC	-449.33
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 001	MEDLINE INDUSTRIES INC	-576.3
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 001	MEDLINE INDUSTRIES INC	-576.3
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-MASK FIT TEST ADAPT005	MEDLINE INDUSTRIES INC	-629.1
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	-792
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE MASKS 003	MEDLINE INDUSTRIES INC	-898.65
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 002	MEDLINE INDUSTRIES INC	-984.47
20200731	MEDICAL & DENTAL SUPPLIES	COVID 19 PPE	PROCUREMENT CARD PAYMENT	-996.75
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE MASK 002	MEDLINE INDUSTRIES INC	-1123.31
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE MASKS 001	MEDLINE INDUSTRIES INC	-1347.98
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 005	MEDLINE INDUSTRIES INC	-1427.49
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 001	MEDLINE INDUSTRIES INC	-1440.75
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-SHOE COVER	PROCUREMENT CARD PAYMENT	-1721.79
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-SHOE COVER	PROCUREMENT CARD PAYMENT	-1750.01
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE MASKS 002	MEDLINE INDUSTRIES INC	-1797.3
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-MISC PPE 001	EMS PROFESSIONALS INC	-1894.18
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 001	EMS PROFESSIONALS INC	-1959.38
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-GOGGLES	OA GENERAL SERVICES - SURPLUS	-2160
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-MASKS 001	MCKESSON MEDICAL-SURGICAL INC	-2323.2
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 004	MEDLINE INDUSTRIES INC	-2555.44
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-MASK FIT TEST ADAPT005	MEDLINE INDUSTRIES INC	-2621.25
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 002	MEDLINE INDUSTRIES INC	-3861.46
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-SHOE COVER	PROCUREMENT CARD PAYMENT	-4120
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-SHOE COVER	PROCUREMENT CARD PAYMENT	-4706.91
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-SEMA PPE	PROCUREMENT CARD PAYMENT	-6238.78
20200731	MEDICAL & DENTAL SUPPLIES	MEDICAL EQUIPMENT AND ACCESS00	MEDLINE INDUSTRIES INC	-7200
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-SHOE COVE 001	SHOE COVER MAGIC INC	-7294.43
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19 SHOE CVR 001	FASTENAL BRANCH MOJEF	-7932.42
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-SEMA PPE	PROCUREMENT CARD PAYMENT	-8925
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-GOGGLES S&H	EMS PROFESSIONALS INC	-10000.05
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 003	MCKESSON MEDICAL-SURGICAL INC	-12150
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19 SHOE CVR 001	FASTENAL BRANCH MOJEF	-13716
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GOGGLES 001	IPROMO	-21037.5
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-SHOE COVE 001	SHOE COVER MAGIC INC	-21371.41
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-GOGGLES	EMS PROFESSIONALS INC	-23377.19
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 002	MCKESSON MEDICAL-SURGICAL INC	-24300
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE 001	FASTENAL BRANCH MOJEF	-25555.2
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-GOGGLESFORDMH	EMS PROFESSIONALS INC	-26010.47
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 001	EMS PROFESSIONALS INC	-32625
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	NMS LLC	-37275.56
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE MASK 001	CLEARMASK LLC	-37500
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	CLEARMASK LLC	-37500
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 001	DAKOTA OUTERWEAR COMPANY	-43387.5
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-MASK 001	MCKESSON MEDICAL-SURGICAL INC	-44700
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES 001	EMS PROFESSIONALS INC	-48937.5

20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE MASK 001	MCKESSON MEDICAL-SURGICAL INC	-51878.1
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-SURGICAL MASKS	K & K SUPPLY INC	-71250
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-SURGICALMASKS	K & K SUPPLY INC	-71250
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	-71298
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	-71424
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLVOES 001	XACT XPRESSIONS INC	-75000
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GOGGLES 001	IPROMO	-134887.5
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHLD 001	BRAESIDE HOLDINGS LLC	-185379.84
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE 001	FASTENAL BRANCH MOJEF	-186552.96
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLVOES 003	XACT XPRESSIONS INC	-192187.5
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GLVOES 002	XACT XPRESSIONS INC	-201562.5
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE 001	FASTENAL BRANCH MOJEF	-209088
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE 001	BRAESIDE HOLDINGS LLC	-214667.28
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE 001	FASTENAL BRANCH MOJEF	-232320
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE 001	FASTENAL BRANCH MOJEF	-232320
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE 001	FASTENAL BRANCH MOJEF	-232320
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACEMASK 001	EMS PROFESSIONALS INC	-243441.5
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	-252504
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	-252504
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE 001	FASTENAL BRANCH MOJEF	-257875.2
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE 001	FASTENAL BRANCH MOJEF	-257875.2
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-GOGGLES 001	IPROMO	-279699.75
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-ISO GOWNS 003	ECLAT COMMERCE INC	-292875
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-GOWNS/PPE	ECLAT COMMERCE INC	-413250
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-ISO GOWNS 003	ECLAT COMMERCE INC	-545812.5
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-GOWNS/PPE	ECLAT COMMERCE INC	-563062.5
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE 001	BRAESIDE HOLDINGS LLC	-577125
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-FACE SHIE 001	BRAESIDE HOLDINGS LLC	-605702.88
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	-636075
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-FACE MASKS	JAY FRANCO AND SON INC	-636075
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-ISO GOWNS 002	ECLAT COMMERCE INC	-1224750
20200731	MEDICAL & DENTAL SUPPLIES	COVID19-ISO GOWNS 001	ECLAT COMMERCE INC	-1258696.88
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19 - ISOLATIONGOWNS	ECLAT COMMERCE INC	-2028673.61
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	NMS LLC	-2320266.94
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19 - ISOLATIONGOWNS	ECLAT COMMERCE INC	-2765142.19
20200731	MEDICAL & DENTAL SUPPLIES	COVID-19-MASKS	NMS LLC	-3838710.19
20200731	UNIFORMS & CLOTHING	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	29.98
20200731	UNIFORMS & CLOTHING	COVID-19 WC PPE FACEMASK	PROCUREMENT CARD PAYMENT	-36.15
20200731	UNIFORMS & CLOTHING	COVID-19-GOWN MATERIAL	PROCUREMENT CARD PAYMENT	-162.38
20200731	UNIFORMS & CLOTHING	COVID-19-GOWN MATERIAL	PROCUREMENT CARD PAYMENT	-252.78
20200804	EXPRESS & FREIGHT SERVICES	COVID-19 SHIPPING PPE	UNITED PARCEL SERVICE	184.18
20200804	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MEDLINE INDUSTRIES INC	6273.01
20200804	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	HENRY SCHEIN INC	77
20200804	OTHER EQUIPMENT RENTALS	COVID-19 STORAGE RENT PPE	APOLLO PORTA POTTIES & PUMPING	100
20200805	CUSTODIAL SUPPLIES	21 COVID-19 EXAM GLOVES	MCKESSON MEDICAL-SURGICAL INC	789.25
20200805	CUSTODIAL SUPPLIES	COVID-19 FACE SHIELDS	PROCUREMENT CARD PAYMENT	253.33
20200805	CUSTODIAL SUPPLIES	COVID-19 FACE SHIELDS	PROCUREMENT CARD PAYMENT	107.1
20200805	CUSTODIAL SUPPLIES	COVID-19 - GLOVES	PROCUREMENT CARD PAYMENT	82.97
20200805	CUSTODIAL SUPPLIES	COVID-19 - GLOVES	PROCUREMENT CARD PAYMENT	18.73
20200805	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	6940.47
20200805	MEDICAL & DENTAL SUPPLIES	FY20 COVID19-PPE	MEDLINE INDUSTRIES INC	22166.7
20200805	MEDICAL & DENTAL SUPPLIES	FY20 COVID19-PPE	MEDLINE INDUSTRIES INC	20930
20200805	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	SHOE COVER MAGIC INC	9725.91
20200805	MEDICAL & DENTAL SUPPLIES	21 COVID-19 GLOVES	MCKESSON MEDICAL - SURGICAL	56.7
20200805	OFFICE SUPPLIES	20 COVID-19 GLOVES	STAPLES ADVANTAGE	10.89
20200805	OFFICE SUPPLIES	20 COVID-19 GLOVES	STAPLES ADVANTAGE	5.78
20200805	OFFICE SUPPLIES	20 COVID-19 GLOVES	STAPLES ADVANTAGE	4.89
20200805	UNIFORMS & CLOTHING	COVID-19 SANITIZER & MASK	PROCUREMENT CARD PAYMENT	139.88
20200805	UNIFORMS & CLOTHING	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	50
20200806	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	35.68
20200806	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	17.84
20200806	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200806	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200806	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200806	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200806	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200806	MEDICAL & DENTAL SUPPLIES	21 COVID19 PPE.DIS.DINNERWA	MAGNOLIA SQUARE NURSING AND RE	38369.4
20200806	MEDICAL & DENTAL SUPPLIES	21 COVID19 CLEANINGSUPP&PPE	REDWOOD OF BLUE RIVER	11650.41
20200806	MEDICAL & DENTAL SUPPLIES	21 COVID19 CLEANINGSUPP&PPE	REDWOOD OF CAMERON	10291.1
20200806	MEDICAL & DENTAL SUPPLIES	21 COVID19 CLEANINGSUPP&PPE	BOONE COUNTY SENIOR CITIZEN	9690.25
20200806	MEDICAL & DENTAL SUPPLIES	21 COVID19 CLEANINGSUPP&PPE	BOONE COUNTY SENIOR CITIZEN	8353.2
20200806	MEDICAL & DENTAL SUPPLIES	20 COVID19 NITRILE GLOVES	HENRY SCHEIN INC	62.1
20200806	OTHER SPECIFIC USE SUPPLIES	21 COVID-19 RESPIRATORS	GRAINGER INDUSTRIAL SUPPLY	2491.5
20200806	OTHER SPECIFIC USE SUPPLIES	21 COVID-19 FACE MASKS	SOUTHERN UNIFORM & EQUIPMENT	1955
20200807	EXPRESS & FREIGHT SERVICES	FY21 COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	9836.81
20200807	EXPRESS & FREIGHT SERVICES	FY20 COVID19-PPE SHIPPING	UPS FREIGHT	3703.87
20200807	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MED 18 SUPPLIES LLC	195000
20200807	MEDICAL & DENTAL SUPPLIES	COVID19 ISOLATION GOWNS	ECLAT COMMERCE INC	83600
20200807	MEDICAL & DENTAL SUPPLIES	FY20 COVID19-PPE	MEDLINE INDUSTRIES INC	2995.5
20200807	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	TSI INC	665.26
20200807	MEDICAL & DENTAL SUPPLIES	FY20 COVID19-PPE	MEDLINE INDUSTRIES INC	95.07
20200807	OFFICE SUPPLIES	20 COVID-19 FACE MASKS	MISSOURI VOCATIONAL	800
20200807	UNIFORMS & CLOTHING	COVID-19 N95 MASKS	PROCUREMENT CARD PAYMENT	6235.56
20200810	MEDICAL & DENTAL SUPPLIES	FY20 COVID19-SHOE COVERS	PROCUREMENT CARD PAYMENT	197.8
20200810	MEDICAL & DENTAL SUPPLIES	FY20 COVID19-RESPIRATOR ACC	PROCUREMENT CARD PAYMENT	42.5
20200811	MEDICAL & DENTAL SUPPLIES	COVID-19 MASK BOX HOLDER	HEALTH CARE LOGISTICS INC	103
20200811	MEDICAL & DENTAL SUPPLIES	20 COVID19 FACE COVERS	MISSOURI VOCATIONAL	40
20200811	MEDICAL & DENTAL SUPPLIES	21 COVID19 FACE COVERS	MISSOURI VOCATIONAL	40



20200811	MEDICAL & DENTAL SUPPLIES	21 COVID19 FACE COVERS	MISSOURI VOCATIONAL	40
20200811	UNIFORMS & CLOTHING	21-COVID-19 KN95 MASKS	MCKESSON MEDICAL-SURGICAL INC	8675
20200811	UNIFORMS & CLOTHING	COVID-19 ISOLATION GOWNS	PROCUREMENT CARD PAYMENT	4275
20200811	UNIFORMS & CLOTHING	21-COVID-19 KN95 MASKS	MCKESSON MEDICAL-SURGICAL INC	3470
20200812	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	1964.04
20200812	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES/MED EQUIP	MCKESSON MEDICAL-SURGICAL INC	191.85
20200812	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	108.24
20200812	MEDICAL & DENTAL SUPPLIES	20 COVID19 CLEAR MASKS	OAKTREE PRODUCTS INC	68.5
20200812	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	HENRY SCHEIN INC	67.4
20200812	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	HENRY SCHEIN INC	67.4
20200812	OTHER ASSISTANCE PAYMENTS	20 COVID19 STAFF & PPE	DELMAR GARDENS SOUTH	71519.75
20200812	OTHER ASSISTANCE PAYMENTS	20 COVID19 STAFF & PPE	ABBAY WOODS OPERATIONS LLC	43011.43
20200812	OTHER ASSISTANCE PAYMENTS	20 COVID19 THERMOM, MASKS,	MOUNT CARMEL COMMUNITIES LLC	21533.32
20200812	OTHER ASSISTANCE PAYMENTS	20 COVID19 MASK,GOWNS,WIPES	MOUNT CARMEL COMMUNITIES LLC	16614.39
20200812	OTHER ASSISTANCE PAYMENTS	20COVID19 PPE,THERMOMETERS	REDWOOD OF INDEPENDENCE	14212.13
20200812	OTHER ASSISTANCE PAYMENTS	20 COVID19 PPE,THERMOMETERS	REDWOOD OF KANSAS CITY SOUTH	12907.43
20200812	OTHER ASSISTANCE PAYMENTS	20 COVID19 STAFF & PPE	MOTHER OF GOOD COUNSEL	12707.42
20200812	OTHER SPECIFIC USE SUPPLIES	20COVID19 MASKS	IPROMO	7120
20200812	OTHER SPECIFIC USE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	41.9
20200812	OTHER SPECIFIC USE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	29.94
20200813	OTHER ASSISTANCE PAYMENTS	20 COVID19 STAFF & PPE	SRZ OP AUTUMN LLC	31172.3
20200813	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASK STANDS	LOWES-ATLANTA	243.41
20200813	OTHER SPECIFIC USE SUPPLIES	20 COVID-19 PPE WRHS BOXES	ULINE INC	238.5
20200813	UNIFORMS & CLOTHING	COVID-19 GLOVES	FASTENAL COMPANY	40.16
20200814	LABORATORY SUPPLIES	FY21 COVID19-PPE SHIPPING	MCKESSON MEDICAL-SURGICAL INC	280.56
20200814	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	ECLAT COMMERCE INC	4437606.25
20200814	MEDICAL & DENTAL SUPPLIES	COVID19 21STAFF GOWNS-FSH	MISSOURI VOCATIONAL	9645.75
20200814	MEDICAL & DENTAL SUPPLIES	20COVID19 GLOVES	BOB BARKER COMPANY INC	4550
20200814	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	93.36
20200814	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	HENRY SCHEIN INC	67.4
20200814	OTHER SPECIFIC USE SUPPLIES	21 COVID19 EYEWEAR	LIVE EYEWEAR INC	499.2
20200814	OTHER SPECIFIC USE SUPPLIES	20 COVID19 FACE MASKS XCVD	OFFICE DEPOT	295
20200814	OTHER SPECIFIC USE SUPPLIES	20 COVID19 FACE MASKS XCVD	OFFICE DEPOT	192
20200814	OTHER SPECIFIC USE SUPPLIES	21 COVID-19 FACE MASKS	S&S WORLDWIDE	187.5
20200814	OTHER SPECIFIC USE SUPPLIES	21 COVID19 FACE MASKS	OFFICE DEPOT-CINCINNATI	118.5
20200814	OTHER SPECIFIC USE SUPPLIES	21 COVID19 FACE MASK	OFFICE DEPOT-CINCINNATI	79
20200814	OTHER SPECIFIC USE SUPPLIES	21 COVID19 FACE MASKS	OFFICE DEPOT-CINCINNATI	24
20200817	CUSTODIAL SUPPLIES	COVID-19 PPE TOUCHLESS SOAP	GRAINGER INDUSTRIAL SUPPLY	332.5
20200817	MEDICAL & DENTAL SUPPLIES	21COVID19 FACECVR	MISSOURI VOCATIONAL	6520
20200817	MEDICAL & DENTAL SUPPLIES	20COVID19 SAFETY GLASSES	FISHER SCIENTIFIC LLC	115.92
20200817	OTHER SPECIFIC USE SUPPLIES	COVID19 FACE CVR	MISSOURI VOCATIONAL	1960
20200817	UNIFORMS & CLOTHING	COVID-19 FACE MASKS	MSC INDUSTRIAL SUPPLY	55
20200818	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	26.76
20200818	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200818	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200818	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200818	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200818	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200818	EXPRESS & FREIGHT SERVICES	FY21 COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	8866.73
20200818	EXPRESS & FREIGHT SERVICES	FY21 COVID19-PPE SHIPPING	UPS FREIGHT	6680.09
20200818	EXPRESS & FREIGHT SERVICES	FY21 COVID19-PPE SHIPPING	UPS FREIGHT	2423.98
20200818	LABORATORY SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	232.74
20200818	LABORATORY SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	141.98
20200818	LABORATORY SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	71.96
20200818	LABORATORY SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	69.82
20200818	LABORATORY SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	48.22
20200818	LABORATORY SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	47.98
20200818	LABORATORY SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	47.19
20200818	LABORATORY SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	46.55
20200818	LABORATORY SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	39.98
20200818	LABORATORY SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	33.32
20200818	LABORATORY SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	30
20200818	LABORATORY SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	28.98
20200818	LABORATORY SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	26.39
20200818	LABORATORY SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	23.75
20200818	LABORATORY SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	16.68
20200818	LABORATORY SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	15.84
20200818	MEDICAL & DENTAL SUPPLIES	21 COVID19 PROCEDURE MASK	MCKESSON MEDICAL-SURGICAL INC	1220.95
20200818	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MEDLINE INDUSTRIES INC	361
20200818	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	253
20200818	MEDICAL & DENTAL SUPPLIES	COVID19 CLEAR MASKS	PROCUREMENT CARD PAYMENT	67
20200818	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	26.82
20200818	OFFICE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	1919.04
20200818	OFFICE SUPPLIES	FY21 COVID19-MGMT COSTS	PROCUREMENT CARD PAYMENT	251.55
20200818	OTHER EQUIPMENT RENTALS	FY21 COVID19-PORTABLETOILET	PROCUREMENT CARD PAYMENT	150
20200818	OTHER SPECIFIC USE SUPPLIES	21 COVID19 GROCERY BAGS-PPE	OFFICE DEPOT-CINCINNATI	31.47
20200819	EXPRESS & FREIGHT SERVICES	COVID19 SHIPPING PPE	UNITED PARCEL SERVICE	352.91
20200819	EXPRESS & FREIGHT SERVICES	COVID19 SHIPPING PPE	UNITED PARCEL SERVICE	287.8
20200819	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	HANESBRANDS INC	505512
20200819	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	HANESBRANDS INC	487257.4
20200819	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	HANESBRANDS INC	411430.6
20200819	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	10015.5
20200819	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS, OXIMETER	MCKESSON MEDICAL-SURGICAL INC	3489.1
20200819	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	595.68
20200819	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	91.05
20200820	MEDICAL & DENTAL SUPPLIES	21 COVID19 GOWNS, SHOE CVR	MCKESSON MEDICAL-SURGICAL INC	2528.9
20200820	UNIFORMS & CLOTHING	COVID19 MASKS & WIPES	PROCUREMENT CARD PAYMENT	333.02
20200821	MEDICAL & DENTAL SUPPLIES	21COVID19CAP,WIPES,SHOE CVR	MCKESSON MEDICAL-SURGICAL INC	1942.58

20200821	MEDICAL & DENTAL SUPPLIES	20 COVID19 FACE MASK	MISSOURI VOCATIONAL	800
20200821	MEDICAL & DENTAL SUPPLIES	20 COVID19 GOWNS	MISSOURI VOCATIONAL	486
20200821	MEDICAL & DENTAL SUPPLIES	COVID-19 DISPOSABLE CAPS	PROCUREMENT CARD PAYMENT	132.19
20200821	MEDICAL & DENTAL SUPPLIES	COVID-19 DISPOSABLE CAPS	PROCUREMENT CARD PAYMENT	83.19
20200821	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	PROCUREMENT CARD PAYMENT	44.99
20200821	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	16.2
20200821	OFFICE SUPPLIES	COVID19 FACE MASKS 08/2020	MISSOURI VOCATIONAL	3600
20200821	UNIFORMS & CLOTHING	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	200
20200824	CUSTODIAL SUPPLIES	COVID19 GLOVES	STAPLES ADVANTAGE	9.78
20200824	EXPRESS & FREIGHT SERVICES	FY21 COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	7415.65
20200824	EXPRESS & FREIGHT SERVICES	FY21 COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	1592.4
20200824	LAW ENFORCEMENT SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	27.94
20200824	LAW ENFORCEMENT SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	20.62
20200824	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	599.7
20200824	OFFICE SUPPLIES	COVID-19 MASKS,SANITIZER	J2 MEDICAL SUPPLY INC	10651.2
20200824	OFFICE SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	29
20200824	OTHER SPECIFIC USE SUPPLIES	21 COVID19 FACE SHIELDS	MCKESSON MEDICAL - SURGICAL	75
20200824	UNIFORMS & CLOTHING	COVID19 CC182584001N95MASK	GRAINGER	5598
20200825	UNIFORMS & CLOTHING	21COVID19 CC191684003 MASKS	MEDICAL SOLUTIONS INC	13421.89
20200826	MEDICAL & DENTAL SUPPLIES	20 COVID19 GLOVES	BOB BARKER COMPANY INC	7956
20200826	MEDICAL & DENTAL SUPPLIES	COVID19 FACEMASKS	FISHER SCIENTIFIC LLC	2382.3
20200826	MEDICAL & DENTAL SUPPLIES	COVID19 ISO GOWNS	FISHER SCIENTIFIC LLC	3878
20200826	OFFICE SUPPLIES	COVID-19 PPE	JOHNS, JULIE M	19.98
20200826	OTHER SPECIFIC USE SUPPLIES	21 COVID19 GLOVES	MCKESSON MEDICAL - SURGICAL	16.2
20200827	AID EDUC INSTIT & SCHOOL DIST	COVID19 PPE SCCC#2	ST CHARLES COMMUNITY COLLEGE	286916.28
20200827	CUSTODIAL SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	53.82
20200827	CUSTODIAL SUPPLIES	COVID-19 FACE SHIELDS	PROCUREMENT CARD PAYMENT	24
20200827	EXPRESS & FREIGHT SERVICES	COVID19 SHIPPING PPE	UNITED PARCEL SERVICE	98.81
20200827	OFFICE SUPPLIES	COVID19 CLEAR FACE MASKS	PROCUREMENT CARD PAYMENT	67
20200827	UNIFORMS & CLOTHING	COVID-19 GAITER FACE CVRS	GRAINGER INDUSTRIAL SUPPLY	2772.5
20200827	UNIFORMS & CLOTHING	COVID-19 GAITER FACE CVRS	GRAINGER INDUSTRIAL SUPPLY	2439.8
20200827	UNIFORMS & CLOTHING	COVID-19 WIPES & MASKS	PROCUREMENT CARD PAYMENT	260.83
20200827	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	46.11
20200827	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	17.15
20200828	EXPRESS & FREIGHT SERVICES	COVID-19 SHIPPING PPE	FEDERAL EXPRESS CORPORATION	36.44
20200828	MEDICAL & DENTAL SUPPLIES	21 COVID19 ISO GOWNS	MCKESSON MEDICAL - SURGICAL	899.68
20200828	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	335.88
20200828	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	HENRY SCHEIN INC	322.9
20200828	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES SANITIZER	MCKESSON MEDICAL-SURGICAL INC	257.7
20200828	MEDICAL & DENTAL SUPPLIES	COVID-19 N95 MASKS	MCKESSON MEDICAL-SURGICAL INC	88.2
20200828	OFFICE SUPPLIES	20 COVID19 FACE MASKS	OAKTREE PRODUCTS INC	70.41
20200828	OFFICE SUPPLIES	20 COVID19 FACE MASKS	OAKTREE PRODUCTS INC	70.28
20200828	OFFICE SUPPLIES	20 COVID19 FACE MASKS	OAKTREE PRODUCTS INC	69.94
20200828	OFFICE SUPPLIES	20 COVID19 FACE MASKS	OAKTREE PRODUCTS INC	69.94
20200828	OFFICE SUPPLIES	20 COVID19 FACE MASKS	OAKTREE PRODUCTS INC	69.94
20200828	OFFICE SUPPLIES	20 COVID19 FACE MASKS	OAKTREE PRODUCTS INC	69.94
20200828	OFFICE SUPPLIES	20 COVID19 FACE MASKS	OAKTREE PRODUCTS INC	67.91
20200828	OFFICE SUPPLIES	20 COVID19 FACE MASKS	OAKTREE PRODUCTS INC	67.91
20200828	OFFICE SUPPLIES	20 COVID19 FACE MASKS	OAKTREE PRODUCTS INC	67.91
20200828	OFFICE SUPPLIES	20 COVID19 FACE MASKS	OAKTREE PRODUCTS INC	67.91
20200828	OFFICE SUPPLIES	20 COVID19 FACE MASKS	OAKTREE PRODUCTS INC	67.91
20200828	OFFICE SUPPLIES	20 COVID19 FACE MASKS	OAKTREE PRODUCTS INC	67.91
20200828	OFFICE SUPPLIES	20 COVID19 FACE MASKS	OAKTREE PRODUCTS INC	67.91
20200828	OFFICE SUPPLIES	20 COVID19 FACE MASKS	OAKTREE PRODUCTS INC	67.91
20200828	OFFICE SUPPLIES	20 COVID19 FACE MASKS	OAKTREE PRODUCTS INC	67.91
20200828	OFFICE SUPPLIES	20 COVID19 FACE MASKS	OAKTREE PRODUCTS INC	60
20200828	OTHER REPAIR & MAINTENANCE SUPP	COVID-19 PPE WAREHOUSE ITEM	ULINE INC	242.88
20200828	OTHER SPECIFIC USE SUPPLIES	21COVID19 GLOVES	STAPLES ADVANTAGE	9.78
20200828	OTHER SPECIFIC USE SUPPLIES	21COVID19 GLOVES	STAPLES ADVANTAGE	9.78
20200828	UNIFORMS & CLOTHING	21COVID19 FACECVR	MCKEAN, LAUREL A	83.52
20200828	UNIFORMS & CLOTHING	COVID-19 FACE MASKS	MISSOURI VOCATIONAL	40
20200828	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	14.84
20200831	EXPRESS & FREIGHT SERVICES	FY21 COVID19-SHIPPING PPE	UNITED PARCEL SERVICE	19637.39
20200831	EXPRESS & FREIGHT SERVICES	FY21 COVID19-PPE SHIPPING	UPS FREIGHT	6128.56
20200831	EXPRESS & FREIGHT SERVICES	FY21 COVID19-SHIPPING PPE	UNITED PARCEL SERVICE	32.75
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COV19-PPE	HANESBRANDS INC	529078
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COV19-PPE	HANESBRANDS INC	529078
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	278784
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	XACT XPRESSIONS INC	269440.08
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	133179.6
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MEDLINE INDUSTRIES INC	58604
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	25836
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MEDLINE INDUSTRIES INC	8970
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	2393.6
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	1548.8
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	985.6
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MEDLINE INDUSTRIES INC	897
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MEDLINE INDUSTRIES INC	835.31
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MEDLINE INDUSTRIES INC	596.65
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MEDLINE INDUSTRIES INC	299
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MEDLINE INDUSTRIES INC	238.66
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MEDLINE INDUSTRIES INC	238.66
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MEDLINE INDUSTRIES INC	238.66
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	208.8
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	171.51
20200831	MEDICAL & DENTAL SUPPLIES	FY21 COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	104.4
20200831	OTHER SPECIFIC USE SUPPLIES	COVID-19 MASKS	FASTENAL COMPANY	236.36
20200831	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT-MASKMAKER	GOLDEN SCOUT INDUSTRIAL LLC	125026.62
20200901	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	63.56



20200901	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	50
20200901	UNIFORMS & CLOTHING	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	5115
20200902	CUSTODIAL SUPPLIES	COVID-19 WIPES & GLOVES	PROCUREMENT CARD PAYMENT	257.92
20200902	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	63.32
20200902	CUSTODIAL SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	55
20200902	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	44.6
20200902	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	26.76
20200902	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	26.76
20200902	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	17.84
20200902	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	17.84
20200902	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	17.84
20200902	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	17.84
20200902	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200902	CUSTODIAL SUPPLIES	COVID-19 GLOVES	FASTENAL COMPANY	8.92
20200902	ENGINEERING & TECHNICAL SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	24.22
20200902	EXPRESS & FREIGHT SERVICES	COVID-19 SHIPPING PPE	UNITED PARCEL SERVICE	268.61
20200902	OFFICE SUPPLIES	COVID19 MASKS	CENTRAL REGION WORKFORCE	189.65
20200902	OFFICE SUPPLIES	COVID19 MASKS	CITY OF SPRINGFIELD-DEPARTMENT	139.96
20200902	OFFICE SUPPLIES	COVID19 MASKS	CITY OF SPRINGFIELD-DEPARTMENT	95.97
20200902	OFFICE SUPPLIES	COVID19 WIPES & MASKS	CITY OF SPRINGFIELD-DEPARTMENT	33.98
20200902	OFFICE SUPPLIES	COVID19 GLOVES	CENTRAL REGION WORKFORCE	29.95
20200902	OFFICE SUPPLIES	COVID19 GLOVES	CENTRAL REGION WORKFORCE	-29.95
20200902	OFFICE SUPPLIES	COVID19 WIPES & MASKS	CITY OF SPRINGFIELD-DEPARTMENT	-33.98
20200902	OFFICE SUPPLIES	COVID19 MASKS	CITY OF SPRINGFIELD-DEPARTMENT	-95.97
20200902	OFFICE SUPPLIES	COVID19 MASKS	CITY OF SPRINGFIELD-DEPARTMENT	-139.96
20200902	OFFICE SUPPLIES	COVID19 MASKS	CENTRAL REGION WORKFORCE	-189.65
20200902	UNIFORMS & CLOTHING	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	53.3
20200902	UNIFORMS & CLOTHING	COVID-19 FACE SHIELDS	PROCUREMENT CARD PAYMENT	39.99
20200903	CLOTHING SUPPLIES	21COVID19 FACE MASK	WAL-MART COMMUNITY	29.88
20200903	EXPRESS & FREIGHT SERVICES	COVID19 SHIP PPE-AUG1520UPS	UPS GROUND FREIGHT INC	4734.63
20200903	EXPRESS & FREIGHT SERVICES	COVID19 SHIP PPE-AUG820UPS	UPS GROUND FREIGHT INC	969.14
20200903	EXPRESS & FREIGHT SERVICES	COVID-19 SHIPPING PPE	UNITED PARCEL SERVICE	35.48
20200903	EXPRESS & FREIGHT SERVICES	COVID SHIP PPE CS170462002	UNITED PARCEL SERVICE	11.67
20200903	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	WW GRAINGER	16964.13
20200903	MEDICAL & DENTAL SUPPLIES	COVID19 FACE CVR	MISSOURI VOCATIONAL	6000
20200903	MEDICAL & DENTAL SUPPLIES	COVID19 FACE CVR	MISSOURI VOCATIONAL	4000
20200903	MEDICAL & DENTAL SUPPLIES	COVID19 FACE CVRS	MISSOURI VOCATIONAL	2520
20200903	MEDICAL & DENTAL SUPPLIES	COVID19 FACE CVRS	MISSOURI VOCATIONAL	1400
20200903	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	CONCORDANCE HEALTHCARE	911.7
20200903	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	HENRY SCHEIN INC	417.4
20200903	MEDICAL & DENTAL SUPPLIES	COVID19 FACE CVRS	MISSOURI VOCATIONAL	400
20200903	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	WW GRAINGER	384.71
20200903	MEDICAL & DENTAL SUPPLIES	COVID19 FACE CVRS	MISSOURI VOCATIONAL	80
20200903	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	WW GRAINGER	10.54
20200903	OTHER SPECIFIC USE SUPPLIES	21 COVID19 MASKS, SANITIZER	OFFICE DEPOT	247.78
20200903	UNIFORMS & CLOTHING	COVID19 MASKS CC191684003	MEDICAL SOLUTIONS INC	18900
20200903	UNIFORMS & CLOTHING	21-COVID19 GOWNS PPE	MISSOURI VOCATIONAL	1350
20200903	UNIFORMS & CLOTHING	21 COVID19 FACE MASKS	MISSOURI VOCATIONAL	80
20200904	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	447.28
20200904	MEDICAL & DENTAL SUPPLIES	21 COVID19 GLOVES	EMPIRE MANAGED SOLUTIONS	834150
20200904	MEDICAL & DENTAL SUPPLIES	21 COVID19 GLOVES	EMPIRE MANAGED SOLUTIONS	639600
20200904	MEDICAL & DENTAL SUPPLIES	21 COVID19 GLOVES	EMPIRE MANAGED SOLUTIONS	42030
20200904	MEDICAL & DENTAL SUPPLIES	21 COVID19 GLOVES	EMPIRE MANAGED SOLUTIONS	22800
20200904	OTHER ASSISTANCE PAYMENTS	20 COVID19 PPE SUPPLIES	BERTRAND NURSING AND REHAB CEN	12619.19
20200908	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	21240.61
20200908	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UPS FREIGHT	10046.49
20200908	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MED 18 SUPPLIES LLC	385752.6
20200908	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	DAKOTA OUTERWEAR COMPANY	34710
20200908	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MEDLINE INDUSTRIES INC	703.08
20200908	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	369.6
20200908	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MEDLINE INDUSTRIES INC	119.33
20200909	EXPRESS & FREIGHT SERVICES	COVID19-SHIPPING PPE	UPS FREIGHT	8655.15
20200909	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	MISSOURI VOCATIONAL	9423
20200909	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE GOWNS	MCKESSON MEDICAL-SURGICAL INC	1113.24
20200909	PROGRAM REIMBURSEMENTS	PPE-08FY21-018	PATRIOT MEDICAL DEVICES LLC	300000
20200909	PROGRAM REIMBURSEMENTS	PPE-07FY21-008	ZONE ENTERPRISES LLC	300000
20200909	PROGRAM REIMBURSEMENTS	PPE-07FY21-011	USA SHIELDS LLC	214376.49
20200909	PROGRAM REIMBURSEMENTS	PPE-07FY21-009	JUSTICE FURNITURE MFG CO INC	112061.14
20200909	PROGRAM REIMBURSEMENTS	PPE-08FY21-028	HABITATA BUILDING PRODUCTS LLC	80678.86
20200909	PROGRAM REIMBURSEMENTS	PPE-07FY21-030	GATEWAY INDUSTRIES OF ELDON	26190
20200909	PROGRAM REIMBURSEMENTS	PPE-08FY21-028	HABITATA BUILDING PRODUCTS LLC	22140.12
20200910	CUSTODIAL SUPPLIES	COVID19 GLOVES,MASK,CLEAN	PROCUREMENT CARD PAYMENT	55.06
20200910	MEDICAL & DENTAL SUPPLIES	COVID-19 - PPE GLOVES	MCKESSON MEDICAL-SURGICAL INC	1697.1
20200910	MEDICAL & DENTAL SUPPLIES	COVID19 FACE SHIELDS	PROCUREMENT CARD PAYMENT	450
20200910	MEDICAL & DENTAL SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	359.8
20200910	MEDICAL & DENTAL SUPPLIES	COVID19 GOWNS	PROCUREMENT CARD PAYMENT	182.34
20200910	MEDICAL & DENTAL SUPPLIES	COVID19 GOWNS	PROCUREMENT CARD PAYMENT	129.99
20200910	UNIFORMS & CLOTHING	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	378.14
20200910	UNIFORMS & CLOTHING	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	100
20200910	UNIFORMS & CLOTHING	COVID-19 SANITIZER, MASKS	MISSOURI VOCATIONAL	80
20200910	UNIFORMS & CLOTHING	COVID-19 MASKS	MISSOURI VOCATIONAL	40
20200910	UNIFORMS & CLOTHING	COVID-19 SURGICAL GOWN	MISSOURI VOCATIONAL	33.75
20200910	UNIFORMS & CLOTHING	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	29.98
20200911	MEDICAL & DENTAL SUPPLIES	20 COVID19 GLOVES	TBS BUSINESS SOLUTIONS USA	55200
20200911	MEDICAL & DENTAL SUPPLIES	COVI-19 PREP PADS & GLOVES	MCKESSON MEDICAL - SURGICAL	90.16
20200914	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	MEDLINE INDUSTRIES INC	2231.08
20200914	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	1453.68
20200914	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE MASK	MCKESSON MEDICAL-SURGICAL INC	858.95

20200914	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	OFFICE DEPOT INC	304.2
20200914	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE GLOVES	HENRY SCHEIN INC	263.2
20200914	MEDICAL & DENTAL SUPPLIES	COVID19 BLEACH WIPES	MEDLINE INDUSTRIES INC	251.46
20200914	MEDICAL & DENTAL SUPPLIES	COVID19 BLEACH WIPES	MEDLINE INDUSTRIES INC	251.46
20200914	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	MCKESSON MEDICAL-SURGICAL INC	204.34
20200914	OTHER SPECIFIC USE SUPPLIES	COVID-19 MASKS	MCKESSON MEDICAL - SURGICAL	168.8
20200914	OTHER SPECIFIC USE SUPPLIES	COVID19 FACE SHIELDS	PROCUREMENT CARD PAYMENT	139.92
20200914	OTHER SPECIFIC USE SUPPLIES	COVID19 FACE SHIELD	PROCUREMENT CARD PAYMENT	37.27
20200914	OTHER SPECIFIC USE SUPPLIES	COVID19 CPR MASK	PROCUREMENT CARD PAYMENT	21.44
20200914	OTHER SPECIFIC USE SUPPLIES	COVID19 CPR MASK	PROCUREMENT CARD PAYMENT	9.46
20200914	UNIFORMS & CLOTHING	COVID-19 PPE COVERALLS	PROCUREMENT CARD PAYMENT	231.81
20200915	EXPRESS & FREIGHT SERVICES	COVID19 SHIP PPE-AUG822UPS	UPS GROUND FREIGHT INC	9980.04
20200915	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	SCHRIEFER'S OFFICE EQUIPMENT,	1000
20200915	PROGRAM REIMBURSEMENTS	COVID19 MASK & HAIRNET MACH	ROI INTERNATIONAL LLC	50000
20200915	PROGRAM REIMBURSEMENTS	COVID19 RAW MAT MAKE PPE	HABITATA BUILDING PRODUCTS LLC	8362.5
20200916	CUSTODIAL SUPPLIES	COVID19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	223.92
20200916	CUSTODIAL SUPPLIES	COVID19 MASK, HAND SANITI	PROCUREMENT CARD PAYMENT	54.95
20200916	CUSTODIAL SUPPLIES	COVID19 MASKS, GLOVES	PROCUREMENT CARD PAYMENT	24
20200916	EXPRESS & FREIGHT SERVICES	COVID19 SHIPPING PPE	UNITED PARCEL SERVICE	62.4
20200916	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	ECLAT COMMERCE INC	1899667
20200916	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	12584
20200916	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	1452
20200916	MEDICAL & DENTAL SUPPLIES	CC202263001 COVID-19 GLOVE	MEDLINE INDUSTRIES INC	1438.24
20200916	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	IPROMO	1296
20200916	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	400.4
20200916	MEDICAL & DENTAL SUPPLIES	CC191684001COVID19-GLOVES	MCKESSON MEDICAL - SURGICAL	253
20200916	OFFICE SUPPLIES	COVID19 MASKS 09/2020	MISSOURI VOCATIONAL	4000
20200916	OFFICE SUPPLIES	20 COVID19 CLEAR MASKS	OAKTREE PRODUCTS INC	975.11
20200916	OFFICE SUPPLIES	20 COVID19 CLEAR MASKS	OAKTREE PRODUCTS INC	616.48
20200916	OFFICE SUPPLIES	20 COVID19 CLEAR MASKS	OAKTREE PRODUCTS INC	70.28
20200916	OFFICE SUPPLIES	20 COVID19 CLEAR MASKS	OAKTREE PRODUCTS INC	67.91
20200916	OFFICE SUPPLIES	20 COVID19 CLEAR MASKS	OAKTREE PRODUCTS INC	67.91
20200916	OFFICE SUPPLIES	20 COVID19 CLEAR MASKS	OAKTREE PRODUCTS INC	67.91
20200916	OFFICE SUPPLIES	20 COVID19 CLEAR MASKS	OAKTREE PRODUCTS INC	67.91
20200916	OFFICE SUPPLIES	20 COVID19 CLEAR MASKS	OAKTREE PRODUCTS INC	67.91
20200916	OFFICE SUPPLIES	20 COVID19 CLEAR MASKS	OAKTREE PRODUCTS INC	67.91
20200916	UNIFORMS & CLOTHING	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	597
20200916	UNIFORMS & CLOTHING	COVID19 MASKS	PROCUREMENT CARD PAYMENT	222.52
20200917	CUSTODIAL SUPPLIES	COVID19 GLOVES, CLEANER	DNR STATE PARKS	732.08
20200917	CUSTODIAL SUPPLIES	COVID19 GLOVES, WIPES	DNR STATE PARKS	640.57
20200917	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UPS GROUND FREIGHT INC	7203.46
20200917	LAW ENFORCEMENT SUPPLIES	COVID19 SHIELD MASK	SOUTHERN UNIFORM & EQUIPMENT	2865.33
20200917	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES/ALCOHOLPA	MEDLINE INDUSTRIES INC	2626.59
20200917	MEDICAL & DENTAL SUPPLIES	COVID19 ISO GOWNS	PROCUREMENT CARD PAYMENT	1190.98
20200917	MEDICAL & DENTAL SUPPLIES	COVID19 ISO GOWNS	PROCUREMENT CARD PAYMENT	807.5
20200917	MEDICAL & DENTAL SUPPLIES	COVID19 SAFETY GLASSES	PROCUREMENT CARD PAYMENT	321.4
20200917	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	PROCUREMENT CARD PAYMENT	199.9
20200917	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	INDUSTRIAL SOAP COMPANY	75.44
20200917	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE MASKS	MCKESSON MEDICAL-SURGICAL INC	60.32
20200917	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	PROCUREMENT CARD PAYMENT	57.75
20200917	MENTAL HEALTH PAYMNTS-1099 YES	COVID19MASK,GLOVE	GREAT CIRCLE	3920
20200917	OFFICE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	46.81
20200917	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-PAY,HAZPAY,PPE	ESTATES OF SPANISH LAKE THE	114642.47
20200917	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-HAZPAY,PPE SUPP	NHC HEALTHCARE DESLOGE	48383.76
20200917	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-HAZPAY,PPE SUPP	N&R OF FARMINGTON LLC	18887.2
20200917	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-THERMOMETER,PPE	BIRCH POINTE HEALTH AND REHABI	16188.31
20200917	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-PPE-MASK,GLOVES	JAMES RIVER NURSING AND REHABI	9298.14
20200917	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-THERMOMETER,PPE	BIRCH POINTE HEALTH AND REHABI	5623.88
20200917	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-THERMOMETER,PPE	JAMES RIVER NURSING AND REHABI	4732.25
20200917	OTHER LABORATORY & MEDICAL SUPPLIES	COVID19 N95 MASKS	OFFICE DEPOT-CINCINNATI	27996
20200917	OTHER SPECIFIC USE SUPPLIES	COVID19 MASK	DNR STATE PARKS	33.2
20200917	UNIFORMS & CLOTHING	COVID19 ISO GOWNS	MISSOURI VOCATIONAL	337.5
20200917	UNIFORMS & CLOTHING	COVID19 MASKS	GRAINGER INDUSTRIAL SUPPLY	282
20200918	CUSTODIAL SUPPLIES	COVID19 FACE CVR, CLEANIN	DNR STATE PARKS	92.94
20200918	CUSTODIAL SUPPLIES	COVID19 GLOVES, TOWELS	DNR STATE PARKS	85.28
20200918	CUSTODIAL SUPPLIES	COVID19 GLOVES, SPRY BOTT	DNR STATE PARKS	71.56
20200918	CUSTODIAL SUPPLIES	COVID19 GLOVES	DNR STATE PARKS	22.44
20200918	EXPRESS & FREIGHT SERVICES	COVID19 SHIPPING PPE	UPS GROUND FREIGHT INC	6348.04
20200918	EXPRESS & FREIGHT SERVICES	COVID19 SHIPPING PPE 9.5.20	UPS GROUND FREIGHT INC	2431.56
20200918	MENTAL HEALTH PAYMNTS-1099 YES	COVID19 MASK,SANI	OZARK CENTER	8218
20200918	OFFICE SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	76.45
20200918	OFFICE SUPPLIES	COVID19 MASKS	PROCUREMENT CARD PAYMENT	35.98
20200918	OFFICE SUPPLIES	COVID19 MASKS	PROCUREMENT CARD PAYMENT	24.89
20200918	OTHER ADMINISTRATIVE SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	53.82
20200918	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-DISINFECT,GOWNS	JAMES RIVER NURSING AND REHABI	13762.55
20200918	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-GLOVES,MASKS,	BIRCH POINTE HEALTH AND REHABI	9844.31
20200918	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-CLEANSUPP,MASK,	JAMES RIVER NURSING AND REHABI	9426.62
20200918	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-GLOVES,SANITIZE	BIRCH POINTE HEALTH AND REHABI	5442.06
20200918	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-DISINFECT,GOWNS	BIRCH POINTE HEALTH AND REHABI	3272.17
20200918	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-CONSULT,MASKS	JAMES RIVER NURSING AND REHABI	3105.54
20200918	OTHER FIXED ASSETS	COVID19PPECABINET	FISHER SCIENTIFIC LLC	2158.4
20200918	OTHER REPAIR & MAINTENANCE SUPP	COVID19 PPE WRHS TAPE	ULINE INC	430.02
20200918	OTHER SPECIFIC USE SUPPLIES	COVID19 FACE MASKS	DNR STATE PARKS	40.6
20200918	OTHER SPECIFIC USE SUPPLIES	COVID19 SAFETY GLASSES	PROCUREMENT CARD PAYMENT	4.48
20200918	OTHER SPECIFIC USE SUPPLIES	COVID19 MASKS	DNR STATE PARKS	3
20200918	UNIFORM & CLOTHING ALLOWANCE	COVID19-PPE SHOE COVERS	PROCUREMENT CARD PAYMENT	1508.76

20200918	UNIFORM & CLOTHING ALLOWANCE	COVID19 GOWNS	MISSOURI VOCATIONAL	675
20200921	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	19965.07
20200921	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	18456.05
20200921	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	1007.54
20200921	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	476.32
20200921	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	FEDERAL EXPRESS CORPORATION	66.44
20200921	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	EMS PROFESSIONALS INC	149688.66
20200921	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	EMS PROFESSIONALS INC	34779.42
20200921	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-STAFF,CLEAN,PPE	REDWOOD OF CARMEL HILLS	11330.35
20200922	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	26.76
20200922	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	24.08
20200922	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	23.04
20200922	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	17.84
20200922	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	17.84
20200922	CUSTODIAL SUPPLIES	COVID19 GLOVES	STAPLES ADVANTAGE	9.78
20200922	CUSTODIAL SUPPLIES	COVID19 GLOVES	STAPLES ADVANTAGE	9.78
20200922	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	8.92
20200922	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	8.92
20200922	EXPRESS & FREIGHT SERVICES	COVID19 SHIPPING PPE	UNITED PARCEL SERVICE	37.06
20200922	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	ECLAT COMMERCE INC	821693.95
20200922	MEDICAL & DENTAL SUPPLIES	COVID19 DISINFECTANT,GLOVES	MCKESSON MEDICAL-SURGICAL INC	926.29
20200922	MEDICAL & DENTAL SUPPLIES	COVID19 MEDICAL GLOVES	MCKESSON MEDICAL-SURGICAL INC	780.16
20200922	MEDICAL & DENTAL SUPPLIES	COVID-19 DISP HAIR CAPS	PROCUREMENT CARD PAYMENT	244.72
20200922	MEDICAL & DENTAL SUPPLIES	COVID-19 DISP HAIR CAPS	PROCUREMENT CARD PAYMENT	69.48
20200922	MEDICAL & DENTAL SUPPLIES	COVID-19 DISPOSABLE GOWNS	PROCUREMENT CARD PAYMENT	44.99
20200922	MEDICAL & DENTAL SUPPLIES	COVID-19 DISP HAIR CAPS	PROCUREMENT CARD PAYMENT	13.99
20200922	OTHER LABORATORY & MEDICAL SUPPLIES	COVID19 MASK,SANI	OFFICE DEPOT LLC	9288.2
20200922	OTHER SPECIFIC USE SUPPLIES	COVID19 SHOE COVERS ST JOE	GRAINGER	87.22
20200922	OTHER SPECIFIC USE SUPPLIES	COVID19 BLEACH, GLOVES	MCKESSON MEDICAL - SURGICAL	84.26
20200922	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	STAPLES ADVANTAGE	9.78
20200922	UNIFORMS & CLOTHING	COVID19 CLOTH MASKS-EMPLYS	MAMAS MEND N SEW LLC	440
20200922	UNIFORMS & CLOTHING	COVID19 MASKS	PROCUREMENT CARD PAYMENT	83.96
20200922	UNIFORMS & CLOTHING	COVID19 MASKS	PROCUREMENT CARD PAYMENT	83.96
20200922	UNIFORMS & CLOTHING	COVID19 MASKS	PROCUREMENT CARD PAYMENT	83.96
20200922	UNIFORMS & CLOTHING	COVID19 MASKS	PROCUREMENT CARD PAYMENT	41.98
20200922	UNIFORMS & CLOTHING	COVID19 MASKS	PROCUREMENT CARD PAYMENT	41.98
20200922	UNIFORMS & CLOTHING	COVID19 MASKS	PROCUREMENT CARD PAYMENT	41.98
20200922	UNIFORMS & CLOTHING	COVID19 MASKS	PROCUREMENT CARD PAYMENT	41.98
20200922	UNIFORMS & CLOTHING	COVID19 MASKS	PROCUREMENT CARD PAYMENT	41.98
20200923	AID EDUC INSTT & SCHOOL DIST	COVID19MASKS,SIGNSMOBERLY#5	MOBERLY AREA COMMUNITY COLLEC	8213.08
20200923	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	GALLS LLC	24000
20200923	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684001 GLOVES,	MCKESSON MEDICAL-SURGICAL	1487.05
20200923	MEDICAL & DENTAL SUPPLIES	COVID19 FACE CVRS	MISSOURI VOCATIONAL	800
20200923	MEDICAL & DENTAL SUPPLIES	COVID19 FACE CVRS	MISSOURI VOCATIONAL	400
20200923	MEDICAL & DENTAL SUPPLIES	COVID19 CC19684004 GLOVES	HENRY SCHEIN INC	77
20200923	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	OFFICE DEPOT LLC	1699.44
20200923	OTHER SPECIFIC USE SUPPLIES	COVID19 PPE WRHSE SUPPLIES	ULINE INC	231.65
20200923	OTHER SPECIFIC USE SUPPLIES	COVID19 MASKS, SANITIZER	OFFICE DEPOT INC	179.74
20200924	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	39.24
20200924	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	26.76
20200924	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	8.92
20200924	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UPS FREIGHT	4432.82
20200924	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	CLEARMASK LLC	200880
20200924	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MORNING STAR INDUSTRIES, INC	187200
20200924	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MEDLINE INDUSTRIES INC	35300
20200924	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	21296
20200924	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	15918.84
20200924	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	1909.8
20200924	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	1732.1
20200924	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	1172.2
20200924	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	1124.5
20200924	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	652.8
20200924	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	442.8
20200924	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MEDLINE INDUSTRIES INC	238.66
20200924	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MEDLINE INDUSTRIES INC	119.33
20200924	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	75.25
20200924	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	17.94
20200924	OTHER SPECIFIC USE SUPPLIES	COVID19 GOGGLES	PROCUREMENT CARD PAYMENT	9.99
20200924	PROGRAM REIMBURSEMENTS	COVID19 PPE EQUIPMENT	HEARTH AND HOME LLC	24000
20200924	PROMOTIONAL SUPPLIES	COVID19 DHEWD MASKS	EMBROIDER IT	1800
20200924	UNIFORMS & CLOTHING	COVID-19 PPE SUPPLIES	PROCUREMENT CARD PAYMENT	3537.5
20200925	CUSTODIAL SUPPLIES	COVID19 SANITIZER, MASKS	IPROMO	1774.34
20200925	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES,	MEDLINE INDUSTRIES INC	6600.24
20200925	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	FISHER SCIENTIFIC LLC	1670
20200925	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GOWNS	MEDLINE INDUSTRIES INC	1351.92
20200925	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	1159.38
20200925	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684001 GLOVES	MCKESSON MEDICAL - SURGICAL	631.8
20200925	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684001 GLOVES	MCKESSON MEDICAL - SURGICAL	461.7
20200925	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684001 GLOVES	MCKESSON MEDICAL - SURGICAL	461.7
20200925	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684001 GLOVES	MCKESSON MEDICAL - SURGICAL	396
20200925	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684001 GLOVES	MCKESSON MEDICAL - SURGICAL	267.3
20200925	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684001 GLOVES	MCKESSON MEDICAL - SURGICAL	227.88
20200925	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684001 GLOVES	MCKESSON MEDICAL - SURGICAL	208.5
20200925	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	55.24
20200925	OFFICE SUPPLIES	COVID19 MASKS SPLY 09/2020	MISSOURI VOCATIONAL	4000
20200925	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-OT,CLEANING,PPE	SPRINGFIELD VILLA	219000
20200925	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-CONSULTING,GOGG	BIRCH POINTE HEALTH AND REHABI	80889.62



20200925	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-STAFF,MASK,WIPE	DELMAR GARDENS OF MERAMEC	55453.39
20200925	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-BARRIERS,MASKS,	N & R OF WARRENTON INC	25425.93
20200925	OTHER ASSISTANCE PAYMENTS	COVID19 GLOVES,WIPES,PPE	BOONE COUNTY SENIOR CITIZEN	21927.4
20200925	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-HAZ PAY, PPE,	PARKSIDE MANOR	19417.9
20200925	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-OT.CLEANING,PPE	BELLEFONTAINE GARDENS NURSING	15386.89
20200928	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	12185.7
20200928	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	819.09
20200928	MEDICAL & DENTAL SUPPLIES	COVID19 PPE-GOWNS	GENTOX MEDICAL SERVICES LLC	1590240.6
20200928	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	DIGITAL DOLPHIN SUPPLIES LLC	678016
20200928	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	HANESBRANDS INC	504078
20200928	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	TIMROON GROUP LLC	128250
20200928	MEDICAL & DENTAL SUPPLIES	COVID19CC191684001 N95MASKS	MCKESSON MEDICAL - SURGICAL	419.1
20200928	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	SHARE CORPORATION	127.57
20200928	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	119.2
20200928	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-MASK,OXIMETER,	ABC HEALTH CARE	22870
20200928	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-THERMOM. GLOVES	SRZ OP AUTUMN LLC	7664.24
20200928	OTHER LABORATORY & MEDICAL SUPPLIES	COVID19CC191684001FACE SHLD	MCKESSON MEDICAL - SURGICAL	38.26
20200929	AID EDUC INSTIT & SCHOOL DIST	COVID19 PPE MO SOUTH ST#9	MISSOURI SOUTHERN STATE	18795.1
20200929	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684001 GLOVES,	MCKESSON MEDICAL - SURGICAL	629.11
20200929	MEDICAL & DENTAL SUPPLIES	COVID19CC191684004 GLOVES,	HENRY SCHEIN INC	527
20200929	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	224.58
20200929	OFFICE SUPPLIES	COVID19 MASK.THERMOMETER,	PROCUREMENT CARD PAYMENT	9492.9
20200929	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 GLOVES	SIMMCO DISTRIBUTION LLC	1350
20200929	UNIFORMS & CLOTHING	COVID19 MASKS	PROCUREMENT CARD PAYMENT	150
20200929	UNIFORMS & CLOTHING	COVID19 MASKS	PROCUREMENT CARD PAYMENT	100
20200930	AID EDUC INSTIT & SCHOOL DIST	COVID19 PPE, MOSOUTHRNST#8	MISSOURI SOUTHERN STATE	8878.04
20200930	MEDICAL & DENTAL SUPPLIES	COVID19 ISO GOWNS	ECLAT COMMERCE INC	46500
20200930	MEDICAL & DENTAL SUPPLIES	COVID19 ISO GOWNS	ECLAT COMMERCE INC	46500
20200930	MEDICAL & DENTAL SUPPLIES	COVID19 ISO GOWNS	ECLAT COMMERCE INC	31000
20200930	MEDICAL & DENTAL SUPPLIES	COVID19 C191684005 FACESHIE	MCKESSON MEDICAL - SURGICAL	1064.88
20200930	MEDICAL & DENTAL SUPPLIES	COVID19 C191684004 GLOVES	HENRY SCHEIN INC	1053.2
20200930	MEDICAL & DENTAL SUPPLIES	COVID19 C191684004 GLOVES	HENRY SCHEIN INC	971.8
20200930	MEDICAL & DENTAL SUPPLIES	COVID19 C191684004 GLOVES	HENRY SCHEIN INC	503.6
20200930	MEDICAL & DENTAL SUPPLIES	COVID19 #CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	268.2
20200930	MEDICAL & DENTAL SUPPLIES	COVID19 C191684004 GLOVES	HENRY SCHEIN INC	251.8
20200930	MEDICAL & DENTAL SUPPLIES	COVID19 CC19684004 GLOVES	HENRY SCHEIN INC	251.8
20200930	MEDICAL & DENTAL SUPPLIES	COVID-19 CC191684001 PPE	MCKESSON MEDICAL - SURGICAL	198
20200930	MEDICAL & DENTAL SUPPLIES	COVID-19 CC191684001 PPE	MCKESSON MEDICAL - SURGICAL	75.4
20200930	MEDICAL & DENTAL SUPPLIES	COVID19 #CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	64.8
20200930	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	HOLLOWAY DISTRIBUTING INC	33.65
20200930	MEDICAL & DENTAL SUPPLIES	COVID19C191684004 CR GLOVES	HENRY SCHEIN INC	-77
20200930	MEDICAL & DENTAL SUPPLIES	COVID19C191684004 CR GLOVES	HENRY SCHEIN INC	-154
20200930	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-WIPES,MASKS,PPE	SRZ OP LEES SUMMIT LLC	60974.3
20200930	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-GLOVES	MAPLE LAWN NURSING HOME	40960
20200930	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-CLEANSUPP, PPE	ST JOSEPH SENIOR LIVING	13574.06
20200930	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-HAZ PAY, MASKS,	GRAND RIVER HEALTH CARE	7551.79
20200930	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-GLOVES,MASKS,	STEELVILLE SENIOR LIVING	6006.6
20200930	OTHER SPECIFIC USE SUPPLIES	COVID19 PPE STRETCH WRA	GRAINGER	377.09
20200930	OTHER SPECIFIC USE SUPPLIES	COVID19 PPE WRHS SUPPLIES	GRAINGER	207.98
20200930	OTHER SPECIFIC USE SUPPLIES	COVID: PPE WRHS STRETCH WRA	GRAINGER	140.32
20200930	OTHER SPECIFIC USE SUPPLIES	COVID19 PPE WRHS SUPPLIES	GRAINGER	124.38
20200930	OTHER SPECIFIC USE SUPPLIES	COVID19 PPE WRHS SUPPLIES	GRAINGER INDUSTRIAL SUPPLY	105.24
20200930	OTHER SPECIFIC USE SUPPLIES	COVID19 PPE WRHS TAPE MEASR	FASTENAL COMPANY	6.4
20201002	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	299.2
20201002	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	148.97
20201002	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	68.91
20201002	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	59.76
20201002	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	57.86
20201002	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	56.04
20201002	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	38.97
20201002	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	35.98
20201002	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	32.02
20201002	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	17.82
20201002	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	15.46
20201002	OTHER ADMINISTRATIVE SUPPLIES	COVID19 MASKS	PROCUREMENT CARD PAYMENT	34.99
20201002	OTHER SPECIFIC USE SUPPLIES	COVID19 SANITIZER, MASKS	PROCUREMENT CARD PAYMENT	242.13
20201002	OTHER SPECIFIC USE SUPPLIES	COVID19 MASKS	PROCUREMENT CARD PAYMENT	142.55
20201002	OTHER SPECIFIC USE SUPPLIES	COVID19 FACE SHIELDS	PROCUREMENT CARD PAYMENT	32.99
20201005	MEDICAL & DENTAL SUPPLIES	COVID19 GOWNS	GENTOX MEDICAL SERVICES LLC	604870.5
20201005	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GOWNS,	MCKESSON MEDICAL - SURGICAL	4961.1
20201005	MEDICAL & DENTAL SUPPLIES	COVID19 #CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	3860
20201005	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GOWNS	MCKESSON MEDICAL - SURGICAL	3630
20201005	MEDICAL & DENTAL SUPPLIES	COVID19 #CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	1697.1
20201005	MEDICAL & DENTAL SUPPLIES	C191684004 COVID 19 GLOVES	HENRY SCHEIN INC	1221.3
20201005	MEDICAL & DENTAL SUPPLIES	COVID19 FACE CVR	MISSOURI VOCATIONAL	1200
20201005	MEDICAL & DENTAL SUPPLIES	COVID19CC191684005 FACESHLD	MCKESSON MEDICAL - SURGICAL	1064.88
20201005	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	859.5
20201005	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005/C19/PPE	MCKESSON MEDICAL - SURGICAL	689.58
20201005	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	614.8
20201005	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	473
20201005	MEDICAL & DENTAL SUPPLIES	COVID19CC191684001 EXAMGLVS	MCKESSON MEDICAL-SURGICAL INC	22.96
20201005	MEDICAL & DENTAL SUPPLIES	COVID19CC191684001 MASK	MCKESSON MEDICAL-SURGICAL INC	15
20201005	MEDICAL & DENTAL SUPPLIES	COVID19 GOGGLES	GRAINGER INDUSTRIAL SUPPLY	11.8
20201005	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-MASKS,ISOGOWNS	MCKNIGHT PLACE EXTENDED CARE	105000
20201005	OTHER LABORATORY & MEDICAL SUPPLIES	COVID19 N95 MASKS	OFFICE DEPOT LLC	27996
20201005	OTHER SPECIFIC USE SUPPLIES	21 COVID19 GLOVES	INDUSTRIAL SOAP COMPANY	521.19
20201005	PROGRAM REIMBURSEMENTS	COVID19 RAW MAT PPE	SELECT PLASTICS LLC	300000
20201005	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RAW MAT PPE	RESTLESS SPIRITS DISTILLING	231570.77

20201005	PROGRAM REIMBURSEMENTS	COVID19CONS/FDA/RAW/EQP PPE	ARCH PACKAGING TECHNOLOGIES	181981.63
20201005	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/BLDG/TECH PPE	GREEN RESOURCES CONSULTING	163227.18
20201005	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RAW/RETOOL PPE	SUGARMILL DISTILLING LLC	144570.11
20201005	PROGRAM REIMBURSEMENTS	COVID19 RAW MAT PPE	POLYFAB PLASTICS & SUPPLY INC	9372.04
20201005	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	FARM AND SPIRIT INC	7704.4
20201005	PROGRAM REIMBURSEMENTS	COVID19 TECH UPDATES PPE	POLYFAB PLASTICS & SUPPLY INC	1043
20201005	WASTE REMOVAL SERVICES	COVID: PPE WRHS TRASH SERVI	REPUBLIC SERVICES OF JEFFERSON	109.12
20201006	MEDICAL & DENTAL SUPPLIES	COVID19CC191684004 GLOVES	HENRY SCHEIN INC	207.2
20201006	PROGRAM REIMBURSEMENTS	COVID19 BUILDING COST PPE	MK MACHINING LLC	21204.9
20201006	PROGRAM REIMBURSEMENTS	COVID19 RAW MAT/SUPPLY PPE	HABITATA BUILDING PRODUCTS LLC	11743.07
20201007	AID EDUC INSTIT & SCHOOL DIST	COVID19 CLEANSUPP.PPE UM#57	UNIVERSITY OF MO-COLUMBIA	164301.89
20201007	CUSTODIAL SUPPLIES	COVID-19 SANITIZER/GLOVES	PROCUREMENT CARD PAYMENT	32.95
20201007	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	27.98
20201007	CUSTODIAL SUPPLIES	COVID19 MASKS	PROCUREMENT CARD PAYMENT	6.88
20201007	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684001- GOWNS	MCKESSON MEDICAL-SURGICAL	5790
20201007	MEDICAL & DENTAL SUPPLIES	COVID 19 CC191684004 GLOV	HENRY SCHEIN INC	1099.6
20201007	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	1005.3
20201007	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684001-GLOVES	MCKESSON MEDICAL-SURGICAL	806.2
20201007	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684001-GLOVES	MCKESSON MEDICAL-SURGICAL	267.3
20201007	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684001-GLOVES	MCKESSON MEDICAL-SURGICAL	115.5
20201007	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	114.25
20201007	OTHER ADMINISTRATIVE SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	35.88
20201007	OTHER ADMINISTRATIVE SUPPLIES	COVID19 KN95 FACE MASKS	PROCUREMENT CARD PAYMENT	6.65
20201007	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	GRAINGER	877
20201007	OTHER SPECIFIC USE SUPPLIES	COVID19 PPEWRHS STRETCH WRA	GRAINGER	315.72
20201007	OTHER SPECIFIC USE SUPPLIES	COVID19PPE WRHS STEEL STRAP	ULINE INC	314.35
20201007	OTHER SPECIFIC USE SUPPLIES	COVID19 LATEX GLOVES	GRAINGER	178.5
20201007	OTHER SPECIFIC USE SUPPLIES	COVID-19 MASKS/PPE	PROCUREMENT CARD PAYMENT	55.84
20201007	UNIFORMS & CLOTHING	COVID19CC191684003 KN95MASK	MEDICAL SOLUTIONS INC	18450
20201007	UNIFORMS & CLOTHING	COVID19 MASKS	NORTHERN SAFETY CO INC	65.1
20201007	UNIFORMS & CLOTHING	COVID19 FACE SHIELDS	PROCUREMENT CARD PAYMENT	55
20201007	UNIFORMS & CLOTHING	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	53.9
20201008	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	190.4
20201008	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	174.2
20201008	CUSTODIAL SUPPLIES	COVID19 SANITIZER, MASKS	PROCUREMENT CARD PAYMENT	114.9
20201008	CUSTODIAL SUPPLIES	COVID-19 DISPOSABLE GLOVE	PROCUREMENT CARD PAYMENT	37.96
20201008	CUSTODIAL SUPPLIES	COVID-19 DISP. GLOVES	PROCUREMENT CARD PAYMENT	31.98
20201008	CUSTODIAL SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	27.5
20201008	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	19.98
20201008	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	17.98
20201008	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UPS FREIGHT	8864.41
20201008	OTHER ADMINISTRATIVE SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	93.8
20201008	OTHER ADMINISTRATIVE SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	88.5
20201008	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 MASKS/SANITIZER	PROCUREMENT CARD PAYMENT	83.76
20201008	OTHER ADMINISTRATIVE SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	69.98
20201008	OTHER ADMINISTRATIVE SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	19.9
20201008	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	14.94
20201008	OTHER LABORATORY & MEDICAL SUPPLIES	COVID19/GLOVES	SIMMCO DISTRIBUTION LLC	2385
20201008	OTHER SPECIFIC USE SUPPLIES	COVID19 MASKS	PROCUREMENT CARD PAYMENT	2468.58
20201008	OTHER SPECIFIC USE SUPPLIES	COVID19 MASKS	PROCUREMENT CARD PAYMENT	2468.58
20201008	OTHER SPECIFIC USE SUPPLIES	COVID19 FACE COVERS	MISSOURI VOCATIONAL	80
20201008	UNIFORMS & CLOTHING	COVID19 FACE MASKS	MISSOURI VOCATIONAL	120
20201008	UNIFORMS & CLOTHING	COVID19 MASK	MISSOURI VOCATIONAL	40
20201009	CUSTODIAL SUPPLIES	COVID19 MASK & CLEAN SUPP	PROCUREMENT CARD PAYMENT	172
20201009	CUSTODIAL SUPPLIES	COVID19 DISINFECTANT&GLOV	PROCUREMENT CARD PAYMENT	123.07
20201009	CUSTODIAL SUPPLIES	COVID19 MASKS & SPRY BOTT	PROCUREMENT CARD PAYMENT	59.97
20201009	CUSTODIAL SUPPLIES	COVID-19 DISPOS. GLOVES	PROCUREMENT CARD PAYMENT	47.97
20201009	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	21.88
20201009	CUSTODIAL SUPPLIES	COVID19 MASKS	PROCUREMENT CARD PAYMENT	12.99
20201009	EXPRESS & FREIGHT SERVICES	COVID19-SHIPPING PPE	UNITED PARCEL SERVICE	14280.21
20201009	EXPRESS & FREIGHT SERVICES	COVID19-SHIPPING PPE	UNITED PARCEL SERVICE	13537.51
20201009	EXPRESS & FREIGHT SERVICES	COVID19-SHIPPING PPE	UPS FREIGHT	9392.74
20201009	EXPRESS & FREIGHT SERVICES	COVID19-SHIPPING PPE	UPS FREIGHT	8319.97
20201009	EXPRESS & FREIGHT SERVICES	COVID19-SHIPPING PPE	UNITED PARCEL SERVICE	368.53
20201009	EXPRESS & FREIGHT SERVICES	COVID19 SHIPPING PPE	UNITED PARCEL SERVICE	81.92
20201009	EXPRESS & FREIGHT SERVICES	COVID19 SHIPPING PPE	UNITED PARCEL SERVICE	50.25
20201009	EXPRESS & FREIGHT SERVICES	COVID19 SHIP PPE09.26.20	UPS GROUND FREIGHT INC	33.54
20201009	IN-STATE COMMERCIAL TRANSIT - OTHER	COVID19-PPE DELIVERY	EAN SERVICES LLC	3025
20201009	MEDICAL & DENTAL SUPPLIES	COVID19 ISO GOWNS	GENTOX MEDICAL SERVICES LLC	3696049.5
20201009	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	277816
20201009	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MEDLINE INDUSTRIES INC	35300
20201009	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	TBS BUSINESS SOLUTIONS USA	19320
20201009	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	DIGITAL DOLPHIN SUPPLIES LLC	717
20201009	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	HANESBRANDS INC	525
20201009	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MEDLINE INDUSTRIES INC	357.99
20201009	MEDICAL & DENTAL SUPPLIES	COVID19 C191684001 GLOVES	MCKESSON MEDICAL - SURGICAL	111.36
20201009	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	44.82
20201009	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	27.92
20201009	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	21
20201009	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	PLASMADENT INC	256330.39
20201009	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	HABITATA BUILDING PRODUCTS LLC	75000
20201009	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RAW MAT PPE	SUGARMILL DISTILLING LLC	68171.05
20201009	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	ROI INTERNATIONAL LLC	52500
20201009	PROGRAM REIMBURSEMENTS	COVID19 RAW MAT/SUPPLIESPPE	HABITATA BUILDING PRODUCTS LLC	14551.2
20201009	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	HEARTH AND HOME LLC	13804.83
20201009	PROGRAM REIMBURSEMENTS	COVID19 BUILDING COSTS PPE	HEARTH AND HOME LLC	13767.21
20201013	AID EDUC INSTIT & SCHOOL DIST	COVID19 PPE MO SOUTHERN#11	MISSOURI SOUTHERN STATE	8114.93
20201013	AID EDUC INSTIT & SCHOOL DIST	COVID19 WIPES,MASKS ECC#7	COMMUNITY COLLEGE DISTRICT	6386.29



20201013	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	30.47
20201013	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	21.4
20201013	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	17.84
20201013	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	15.16
20201013	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	15.16
20201013	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	12.48
20201013	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	8.92
20201013	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	8.92
20201013	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	8.92
20201013	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	346.74
20201013	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	232.94
20201013	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	179.04
20201013	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	166.04
20201013	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	166.04
20201013	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	166.04
20201013	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	166.04
20201013	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	166.04
20201013	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	166.04
20201013	EXPRESS & FREIGHT SERVICES	PPE SHIPPING	UPS FREIGHT	166.04
20201013	PROGRAM REIMBURSEMENTS	COVID19 EQP/HVAC/SUPPLS PPE	GOLDEN SCOUT INDUSTRIAL LLC	140923.62
20201013	PROGRAM REIMBURSEMENTS	COVID19 TECH UPDATES PPE	POLYFAB PLASTICS & SUPPLY INC	1295
20201014	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	HENRY SCHEIN INC	154
20201014	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	HENRY SCHEIN INC	77
20201014	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	CONCORDANCE HEALTHCARE	22.5
20201015	AID EDUC INSTIT & SCHOOL DIST	COVID19 PPE EASTCENTRAL#6	EAST CENTRAL COLLEGE	12750.78
20201015	CLOTHING SUPPLIES	COVID19 ISOLATION GOWNS	MCKESSON MEDICAL - SURGICAL	1930
20201015	CLOTHING SUPPLIES	COVID19 ISOLATION GOWNS	MCKESSON MEDICAL - SURGICAL	1930
20201015	EXPRESS & FREIGHT SERVICES	COVID19PPE-SHIPPING-PALLETS	COYOTE LOGISTICS LLC	1100
20201015	EXPRESS & FREIGHT SERVICES	COVID19PPE-SHIPPING-PALLETS	COYOTE LOGISTICS LLC	1100
20201015	EXPRESS & FREIGHT SERVICES	COVID19PPE-SHIPPING-PALLETS	COYOTE LOGISTICS LLC	1100
20201015	EXPRESS & FREIGHT SERVICES	COVID19PPE-SHIPPING-PALLETS	COYOTE LOGISTICS LLC	1062.5
20201015	EXPRESS & FREIGHT SERVICES	COVID19PPE-SHIPPING-PALLETS	COYOTE LOGISTICS LLC	1025
20201015	MEDICAL & DENTAL SUPPLIES	COVID19RESPIRATOR	GRAINGER	400000
20201015	MEDICAL & DENTAL SUPPLIES	COVID19CC191684005GOWNS,PPE	MCKESSON MEDICAL - SURGICAL	22686.34
20201015	MEDICAL & DENTAL SUPPLIES	COVID19CC182584001MASK DISP	GRAINGER INDUSTRIAL SUPPLY	2819.35
20201015	MEDICAL & DENTAL SUPPLIES	COVID19 PPE MASK	MCKESSON MEDICAL-SURGICAL INC	2309.25
20201015	MEDICAL & DENTAL SUPPLIES	COVID19 PPE FACE SHIELD	MCKESSON MEDICAL-SURGICAL INC	1805.72
20201015	MEDICAL & DENTAL SUPPLIES	COVID19 ISOLATION GOWNS	MCKESSON MEDICAL - SURGICAL	965
20201015	MEDICAL & DENTAL SUPPLIES	COVID19 ISOLATION GOWNS	MCKESSON MEDICAL - SURGICAL	965
20201015	MEDICAL & DENTAL SUPPLIES	COVID19CC202263001GLOVES	MEDLINE INDUSTRIES INC	780.24
20201015	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	606
20201015	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	MCKESSON MED SURG GOV SOL LLC	461.4
20201015	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	MCKESSON MEDICAL - SURGICAL	454.24
20201015	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	452.18
20201015	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	447.64
20201015	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES, PADS WIPES	MCKESSON MEDICAL - SURGICAL	287.45
20201015	MEDICAL & DENTAL SUPPLIES	COVID19CC191684005FACESHIEL	MCKESSON MEDICAL - SURGICAL	266.22
20201015	MEDICAL & DENTAL SUPPLIES	COVID19 FACE SHIELD	MCKESSON MEDICAL - SURGICAL	238.8
20201015	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	MCKESSON MEDICAL - SURGICAL	169.6
20201015	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	MCKESSON MEDICAL - SURGICAL	24.3
20201015	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GLOVES	MCKESSON MEDICAL - SURGICAL	9.9
20201015	OFFICE SUPPLIES	COVID19 MASKS, GLOVES,	J2 MEDICAL SUPPLY INC	48772
20201015	OFFICE SUPPLIES	COVID19 MASKS	PROCUREMENT CARD PAYMENT	170.5
20201015	OTHER ASSISTANCE PAYMENTS	COVID19 PAY, PPE	JORDAN CREEK NURSING & REHAB	22685.67
20201015	OTHER ASSISTANCE PAYMENTS	COVID19 HAZPAY,BARRIERS,PPE	POTOSI MANOR	13217.92
20201015	OTHER ASSISTANCE PAYMENTS	COVID19HAZPAY,PPE	GAMMA ROAD LODGE	7663.94
20201015	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	FOAM PRODUCTS CORPORATION	167933.5
20201015	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	HABITATA BUILDING PRODUCTS LLC	100000
20201015	UNIFORMS & CLOTHING	COVID19 CC182584001 RESPIRA	GRAINGER	12618
20201015		COVID19 WIPES,MASKS ECC#7	COMMUNITY COLLEGE DISTRICT	-6386.29
20201016	EXPRESS & FREIGHT SERVICES	COVID19 SHIPPING PPE	UNITED PARCEL SERVICE	51.34
20201016	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	NEW MARK CARE CENTER	42796.6

20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	480.82
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	475.6
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	436.61
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	412.68
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	405.62
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	403.96
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	396.18
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	394.1
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	392.22
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	386.29
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	372.28
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	354.69
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	354.3
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	354.3
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	348.76
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	340.68
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	338.27
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	336.14
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	327.12
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	326.76
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	321.36
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	320.79
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	319.93
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	316.96
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	314.3
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	306.1
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	305.84
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	305.31
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	305.02
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	304.79
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	302.27
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	291.59
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	288.77
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	275.41
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	274.9
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	274.02
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	267.11
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	242.75
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	235.91
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	219.09
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	210.7
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	210.12
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	206.76
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	206.76
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	196.45
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	195.37
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	179.16
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	174.96
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	170.21
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	166.04
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	166.04
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	166.04
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	166.04
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	166.04
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	166.04
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	166.04
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	166.04
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	166.04
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	166.04
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	165.91
20201019	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING	UPS FREIGHT	165.91
20201019	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	390.12
20201019	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001	MEDLINE INDUSTRIES INC	225.88
20201019	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY AND PPE	DELMAR GARDENS OF CHESTERFIELD	65604.92
20201019	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	NHC HEALTHCARE/KENNETT LLC	59751.68
20201019	OTHER ASSISTANCE PAYMENTS	COVID19 LTC HAZ PAY, PPE	REPUBLIC NURSING AND REHAB	25829.14
20201019	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/EQU0929 XNCV	JOPLIN GARDENS	25404.23
20201019	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY,BARRIER,PPE	STRAFFORD CARE CENTER	21293.71
20201019	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPP0928 XNCV	MCDONALD COUNTY LIVING CENTER	20928.16
20201019	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPP0929 XNCV	TIPTON OAK MANOR	18491.01
20201019	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPP0930 XNCV	HERMITAGE NURSING & REHAB	18193.05
20201019	OTHER ASSISTANCE PAYMENTS	COVID19 PAY,CLEANSUP,PPE	NEW MADRID LIVING CENTER	17214
20201019	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE SUPP1005 XNCV	LEWIS COUNTY NURSING HOME	14583.89
20201019	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	N & R OF FREDERICKTOWN	14373.31
20201019	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/CLEA0929 XNCV	CUBA MANOR INC	13310.36
20201019	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPP0928 XNCV	MARYVILLE LIVING CENTER	13158.59
20201019	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY,PPE,THERMOM	MONTICELLO HOUSE	10667.94
20201019	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPRPROD,PPE	DELMAR GARDENS OF CHESTERFIELD	8256.54
20201019	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUP0929 XNCV	CURRENT RIVER NURSING CENTER	7944.65
20201019	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY,PPRPROD,PPE	CHARLESTON MANOR	7680.48
20201019	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPP0928 XNCV	MINER NURSING CENTER	7235.98
20201019	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPP0928 XNCV	GLASGOW GARDENS	6850.8
20201019	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPP1005 XNCV	LEWIS COUNTY NURSING HOME	6808.38

20201019	OTHER ASSISTANCE PAYMENTS	COVID19 LTC THERMOMETER,PPE	CLARK COUNTY NURSING HOME	6797.82
20201019	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPP0929 XNCV	GLENWOOD HEALTHCARE	6240.77
20201019	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	DIXON NURSING & REHAB	6098.1
20201019	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPP0929 XNCV	HARTVILLE CARE CENTER	5437.9
20201019	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE,BARRIERSUPP	RIDGEVIEW LIVING COMMUNITY	4793.46
20201019	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	DEXTER LIVING CENTER	3717.44
20201019	OTHER SPECIFIC USE SUPPLIES	COVID-19 MASKS/SANITIZE0928	OFFICE DEPOT LLC	473.86
20201019	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASKS 0929	OFFICE DEPOT LLC	199.9
20201019	OTHER SPECIFIC USE SUPPLIES	COVID-19 KN-95 MASKS 0929	STAPLES ADVANTAGE	172.65
20201019	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASKS 0929	STAPLES ADVANTAGE	163.6
20201019	PROGRAM REIMBURSEMENTS	COVID-19 PPE/SUPPLIES	PEARL CRESCENT MONTESSORI LLC	4517
20201019	PROGRAM REIMBURSEMENTS	COVID19 GLOVES,PPRPROD,SPRY	WEBSTER CHILD CARE CENTER	4517
20201019	PROGRAM REIMBURSEMENTS	COVID-19 PPE/THERMOMETERS/	SEEDS OF FAITH PRESCHOOL	3614
20201019	PROGRAM REIMBURSEMENTS	COVID-19 PPE/CLEANING SUP	AMY POEKLER	1808
20201019	UNIFORMS & CLOTHING	COVID-19 PPE FACE MASKS	MISSOURI STATE TROOPERS	456
20201020	LAW ENFORCEMENT SUPPLIES	COVID19 CLOTH FACEMASK	LEON UNIFORM COMPANY INC	797.5
20201020	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	795.4
20201020	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	389.4
20201020	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GLOVES	MCKESSON MEDICAL - SURGICAL	357.6
20201020	MEDICAL & DENTAL SUPPLIES	COVID19 FACE MASKS	MCKESSON MEDICAL-SURGICAL INC	60.32
20201020	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	CHEMISPHERE CORPORATION	210977.3
20201021	EXPRESS & FREIGHT SERVICES	COVID19 PPE - SHIPPING	COYOTE LOGISTICS LLC	1100
20201021	EXPRESS & FREIGHT SERVICES	COVID19 PPE - SHIPPING	COYOTE LOGISTICS LLC	950
20201021	EXPRESS & FREIGHT SERVICES	COVID19 PPE - SHIPPING	COYOTE LOGISTICS LLC	950
20201021	LAW ENFORCEMENT SUPPLIES	COVID19 GLOVES XL	GRAINGER INC	85.96
20201021	MEDICAL & DENTAL SUPPLIES	COVID19 C191684004 GLOVES	HENRY SCHEIN INC	3008.2
20201021	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	WW GRAINGER	156.29
20201021	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	NHC HEALTHCARE MARYLAND	330000
20201021	OTHER ASSISTANCE PAYMENTS	COVID19 PAY,PPE	POINT LOOKOUT NURSING & REHAB	25865.63
20201021	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	ROCKY RIDGE MANOR	5833.06
20201021	OTHER SPECIFIC USE SUPPLIES	COVID19 MASKS	MCKESSON MEDICAL - SURGICAL	84.4
20201022	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	119.9
20201022	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	15393.16
20201022	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	15308.18
20201022	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	35375.2
20201022	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684001 MASKS	MCKESSON MEDICAL - SURGICAL	1605.55
20201022	MEDICAL & DENTAL SUPPLIES	COVID19C191684005FACESHIELD	MCKESSON MEDICAL - SURGICAL	1095.16
20201022	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684001 GLOVES	MCKESSON MEDICAL - SURGICAL	613.32
20201022	MEDICAL & DENTAL SUPPLIES	COVID19 FACE SHIELDS	MCKESSON MED SURG GOV SOL LLC	532.44
20201022	OFFICE SUPPLIES	COVID-19 MASKS 10/2020	MISSOURI VOCATIONAL	4000
20201022	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	SONSHINE MANOR	22861.12
20201022	OTHER ASSISTANCE PAYMENTS	COVID19 PAY, TWLS, PPE	NIXA NURSING & REHAB	15178.2
20201022	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY, PPE	TIPTON OAK MANOR	14963.39
20201022	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANING,PPE	N & R OF JONESBURG INC	13586.94
20201022	OTHER ASSISTANCE PAYMENTS	COVID19 PAY,BARRIERS,PPE	SILEX COMMUNITY CARE	13458.42
20201022	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANING,PPE	SWEET SPRINGS VILLA	12402.77
20201022	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY,CLEAN,PPE	SUNSET HOME	8057.8
20201022	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANING,PPE	SWEET SPRINGS VILLA	6607.46
20201022	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE, HP AIR MOV	DELMAR GARDENS NORTH OPERATING	3885.9
20201022	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANING,PPE	SMITHVILLE LIVING CENTER	2732.94
20201022	OTHER SPECIFIC USE SUPPLIES	COVID19 MASKS	IPROMO	15818.56
20201022	PROGRAM REIMBURSEMENTS	COVID19 RAW MAT/EQUIP PPE	HABITATA BUILDING PRODUCTS LLC	100225
20201022	PROGRAM REIMBURSEMENTS	COVID19 GLOVES,MASKS,CLEAN	LOS NINOS III	4517
20201022	PROGRAM REIMBURSEMENTS	COVID19 CHILD CARE PAY, PPE	LIBERTY MONTESSORI CENTER	3614
20201022	PROGRAM REIMBURSEMENTS	COVID19 MASKS,THERMOMETER,	OLIVIA S HOUSE	3614
20201022	PROGRAM REIMBURSEMENTS	COVID19 CHILDCARE PAY,PPE	WEE ROCK LEARNING CENTER	3614
20201022	PROGRAM REIMBURSEMENTS	COVID19 CHILDCARE MASK,GLOV	LEE, LAKISHA	903
20201023	AID EDUC INSTIT & SCHOOL DIST	COVID19 PAY, PPE SCCC#5	ST CHARLES COMMUNITY COLLEGE	147775.13
20201023	CUSTODIAL SUPPLIES	COVID19 CLEANINGSUP, MASK	PROCUREMENT CARD PAYMENT	259.72
20201023	CUSTODIAL SUPPLIES	COVID19 GLOVES	DEMPEY, MARY	21.64
20201023	EDUCATION ASSIST PAYMENTS	COVID19 MATTIC TRAIN 10/20	NEW REFLECTIONS TECHNICAL	3500
20201023	EXPRESS & FREIGHT SERVICES	COVID19 PPE-SHIPPIING	COYOTE LOGISTICS LLC	1100
20201023	EXPRESS & FREIGHT SERVICES	COVID19 PPE-SHIPPIING	COYOTE LOGISTICS LLC	950
20201023	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	EMS PROFESSIONALS INC	249049.02
20201023	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	GRAINGER	7975.25
20201023	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	GRAINGER	4932
20201023	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	GRAINGER	4595
20201023	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	GRAINGER	2038.26
20201023	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	GRAINGER	1394
20201023	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	1324.55
20201023	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	MCKESSON MEDICAL-SURGICAL INC	881.6
20201023	MEDICAL & DENTAL SUPPLIES	COVID19 CC182584001 GOGGLES	GRAINGER INDUSTRIAL SUPPLY	725
20201023	MEDICAL & DENTAL SUPPLIES	COVID19 WIPES AND MASKS	MCKESSON MEDICAL-SURGICAL INC	278.72
20201023	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	GRAINGER	177.24
20201023	MEDICAL & DENTAL SUPPLIES	COVID19 RESPIRATOR	OFFICE DEPOT LLC	79.99
20201023	MEDICAL & DENTAL SUPPLIES	COVID19 RESPIRATOR	OFFICE DEPOT LLC	79.99
20201023	OTHER MISCELLANEOUS EXPENSE	COVID19 GLOVES, WIPES	WEST, SALLIE	68.49
20201023	OTHER SPECIFIC USE SUPPLIES	COVID19 FACESHEILD,SNEEZE	PROCUREMENT CARD PAYMENT	4086.39
20201023	OTHER SPECIFIC USE SUPPLIES	COVID-19 PPE GLOVES	GALLS LLC	345.48
20201023	OTHER SPECIFIC USE SUPPLIES	COVID 19 PPE GLOVES	GALLS LLC	345.47
20201023	OTHER SPECIFIC USE SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	277.65
20201023	OTHER SPECIFIC USE SUPPLIES	COVID19 SANITIZER,ICEPKS,	PROCUREMENT CARD PAYMENT	198.45
20201023	OTHER SPECIFIC USE SUPPLIES	COVID19 MASK SUPPLIES	PROCUREMENT CARD PAYMENT	192.74
20201023	OTHER SPECIFIC USE SUPPLIES	COVID19 FACE MASK MATERIA	PROCUREMENT CARD PAYMENT	79.98
20201023	OTHER SPECIFIC USE SUPPLIES	COVID19 MASKS	PROCUREMENT CARD PAYMENT	71.76
20201023	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	STAPLES ADVANTAGE	7.7
20201023	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	STAPLES ADVANTAGE	2.08
20201023	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	JUSTICE FURNITURE MFG CO INC	55789.04



20201026	AID EDUC INSTIT & SCHOOL DIST	COVID19 PPE,SFTWR EASTCC#9	EAST CENTRAL COLLEGE	64096.19
20201026	AID EDUC INSTIT & SCHOOL DIST	COVID19 LAPTOP, PPE ECCC#5	EAST CENTRAL COLLEGE	945.08
20201026	EXPRESS & FREIGHT SERVICES	COVID19 PPE-SHIPPING	COYOTE LOGISTICS LLC	950
20201026	MEDICAL & DENTAL SUPPLIES	COVID19 C191684004 GLOVES	HENRY SCHEIN INC	1527
20201026	MEDICAL & DENTAL SUPPLIES	COVID-19 SANI WIPES, GLOVES	MCKESSON MEDICAL - SURGICAL	289.52
20201026	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	MCKESSON MEDICAL - SURGICAL	76.52
20201026	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	FISHER SCIENTIFIC LLC	301.5
20201026	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	FISHER SCIENTIFIC LLC	200.1
20201026	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	FISHER SCIENTIFIC LLC	100.5
20201026	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	GRAINGER	88.1
20201026	PROGRAM REIMBURSEMENTS	COVID19 BLDG CST/EQUIP PPE	SUGARMILL DISTILLING LLC	235806.7
20201026	PROGRAM REIMBURSEMENTS	COVID19 EQUIP PPE-08FY21	BINKY GUY TEXTILES	187275.31
20201026	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	HABITATA BUILDING PRODUCTS LLC	80450
20201026	PROGRAM REIMBURSEMENTS	COVID19 PPE BUILDING FY21	GATEWAY INDUSTRIES OF ELDON	73634
20201026	PROGRAM REIMBURSEMENTS	COVID19 RAW MAT PPE-08FY21	MILBANK MANUFACTURING CO	12667.5
20201026	PROGRAM REIMBURSEMENTS	COVID19 CHILDCARE PAY & PPE	MID RIVERS DAY CARE	3614
20201026	PROGRAM REIMBURSEMENTS	COVID19 CHILDCARE CLEAN&PPE	AUNT MARTHAS PRESCHOOL & DAY	3391.6
20201027	CUSTODIAL SUPPLIES	COVID19 GLOVES	GRAINGER INDUSTRIAL SUPPLY	21.08
20201027	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UPS FREIGHT	12066.35
20201027	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UPS FREIGHT	4594.71
20201027	EXPRESS & FREIGHT SERVICES	COVID19 PPE-SHIPPING	COYOTE LOGISTICS LLC	950
20201027	EXPRESS & FREIGHT SERVICES	COVID19 PPE-SHIPPING	COYOTE LOGISTICS LLC	950
20201027	EXPRESS & FREIGHT SERVICES	COVID19 PPE-SHIPPING	COYOTE LOGISTICS LLC	950
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	937.77
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	765.4
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	738.22
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	711.35
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	679.51
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	669.62
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	628.88
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	620.35
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	614.43
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	609.44
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	602.68
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	601.43
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	595.74
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	591.85
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	587.21
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	582.03
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	581.57
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	573.39
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	573.39
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	567.95
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	562.34
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	561.32
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	554.53
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	553.73
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	546.34
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	539.92
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	539.65
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	531
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	529.53
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	529.53
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	527.59
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	522.18
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	511.53
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	509.68
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	504.19
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	503.04
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	500.96
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	499.37
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	493.88
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	492.39
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	489.82
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	486.66
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	461.82
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	459.64
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	458.01
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	454.38
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	451.89
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	450.59
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	448.41
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	444.41
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	440.76
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	440.49
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	437.43
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	435.33
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	435.11
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	433
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	432.96
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	432.51
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	430.11
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	428.96
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	419.48
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	414.24
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	413.59
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	407.56
20201027	EXPRESS & FREIGHT SERVICES	PPE-SHIPPING COVID 19	UPS FREIGHT	405.42

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20201028	OTHER ASSISTANCE PAYMENTS	COVID19 BARRIERS,CLEAN,PPE	WESTWOOD LIVING CENTER	12624.72
20201028	OTHER ASSISTANCE PAYMENTS	COVID19 BARRIERS,CLEAN,PPE	WESTWOOD LIVING CENTER	7560
20201028	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,BARRIERS,PPE	RIVER CITY LIVING COMMUNITY	7367.43
20201028	OTHER ASSISTANCE PAYMENTS	COVID19 CLEANSUP,FILTER,PPE	DELMAR GARDENS WEST OPERATING	6640.67
20201028	OTHER REPAIR & MAINTENANCE SUPP	COVID19 BLDG SUPPLIES-PPE	PROCUREMENT CARD PAYMENT	223.89
20201028	OTHER SPECIFIC USE SUPPLIES	COVID19 PPE WRHS 32 ECT BOX	ULINE INC	966.35
20201028	PROGRAM REIMBURSEMENTS	COVID19EQUIP/RAWMAT/FDA PPE	GREEN RESOURCES CONSULTING	275126
20201028	PROGRAM REIMBURSEMENTS	COVID19EQUIP/RAWMAT/BLDGPPPE	GREEN RESOURCES CONSULTING	179699.26
20201028	UNIFORMS & CLOTHING	COVID19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	195.46
20201029	CUSTODIAL SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	149.85
20201029	CUSTODIAL SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	15.98
20201029	EXPRESS & FREIGHT SERVICES	COVID-19 PPE - SHIPPING	UNITED PARCEL SERVICE	7342.53
20201029	MEDICAL & DENTAL SUPPLIES	COVID19 N95 MASK	MCKESSON MEDICAL - SURGICAL	642.22
20201029	MEDICAL & DENTAL SUPPLIES	COVID19 N95 RESPIRATORS	DIRECT SUPPLY INC	118
20201029	MEDICAL & DENTAL SUPPLIES	COVID19CCI191684005BAGS-MASK	MCKESSON MEDICAL - SURGICAL	109.58
20201029	MENTAL HEALTH PAYMNTS-1099 YES	COVID19MASK,GLOVE	MAPLE RIDGE RESIDENTIAL CARE	1308
20201029	MENTAL HEALTH PAYMNTS-1099 YES	COVID19MASK,THERM	COLUMBIA STREET RESIDENTIAL	630
20201029	OFFICE SUPPLIES	COVID19 CLOTH MASKS	STAPLES BUSINESS ADVANTAGE	72.44
20201029	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE 1022 XNCV	GRAND PAVILION AT THE PLAZA	60002.65
20201029	OTHER ASSISTANCE PAYMENTS	COVID19 LTC BATTERIES,PPE	DELMAR GARDENS OF OFALLON	56649.98
20201029	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	OSAGE BEACH REHABILITATION & H	38489.6
20201029	OTHER ASSISTANCE PAYMENTS	COVID19 PAY, DISINFECT, PPE	NIXA NURSING & REHAB	28402.78
20201029	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE SUPPLIES XNCV	GRAND PAVILION AT THE PLAZA	22260.1
20201029	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/CLEANING 1023	MARIES MANOR	18978.59
20201029	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE 1022 XNCV	GRAND PAVILION AT THE PLAZA	14898.98
20201029	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	MARIES MANOR	13525.89
20201029	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/EQUIP 1022 X	MOUNT CARMEL COMMUNITIES LLC	13059.2
20201029	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES1022	DELMAR GARDENS OF OFALLON	3756.07
20201029	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/CLEAN SUP XNCV	HOPE CARE CENTER	2731.51
20201029	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES XNCV	DELMAR GARDENS OF CREVE COEUR	2251.89
20201029	OTHER ASSISTANCE PAYMENTS	COVID19LTC MASKS,GLOVES,PPE	HOPE CARE CENTER	1527.78
20201029	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/CLEAN SUP XNCV	HOPE CARE CENTER	544.64
20201029	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE 1023 XNCV	DELMAR GARDENS OF OFALLON	200.11
20201029	OTHER LABORATORY & MEDICAL SUPPLIES	COVID19FACEMASKS	OFFICE DEPOT LLC	20997
20201029	OTHER SPECIFIC USE SUPPLIES	COVID19 N95 MASK,RESPIRATOR	OFFICE DEPOT LLC	219.94
20201029	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/TECH/FDA PPE	EXECUTIVE DATA CONTROL	235010.74
20201029	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COSTS PPE	CHAMPION BRANDS LLC	141821.21
20201029	PROGRAM REIMBURSEMENTS	COVID19 SUPPLIES PPE	HABITATA BUILDING PRODUCTS LLC	56730
20201029	PROGRAM REIMBURSEMENTS	COVID19 RETOOL/EQUIP PPE	FARM AND SPIRIT INC	17225.72
20201029	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COSTS PPE	MK MACHINING LLC	11102.9
20201029	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COSTS PPE	SUGARMILL DISTILLING LLC	10770
20201029	UNIFORMS & CLOTHING	COVID19 CC191684003 GOWNS,	MEDICAL SOLUTIONS INC	7386.5
20201029	UNIFORMS & CLOTHING	COVID19 CLEANSUPP & MASKS	PROCUREMENT CARD PAYMENT	480
20201029	UNIFORMS & CLOTHING	COVID19 STAFF GOWN	MISSOURI VOCATIONAL	371.25
20201029	UNIFORMS & CLOTHING	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	356.4
20201029	UNIFORMS & CLOTHING	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	299.8
20201029	UNIFORMS & CLOTHING	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	82.5
20201029	UNIFORMS & CLOTHING	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	75
20201029	UNIFORMS & CLOTHING	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	59.96
20201030	MEDICAL & DENTAL SUPPLIES	COVID19 FACE CVRS	MISSOURI VOCATIONAL	4320
20201030	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	GRAINGER	3515.26
20201030	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	FISHER SCIENTIFIC LLC	2137.6
20201030	MEDICAL & DENTAL SUPPLIES	COVID19 FACESHIEL	MCKESSON MED SURG GOV SOL LLC	227.1
20201030	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	GRAINGER	118.16
20201030	OFFICE SUPPLIES	COVID19 CLEAR FACE MASKS	OAKTREE PRODUCTS INC	1366.86
20201030	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES	WILSONS CREEK NURSING & REHAB	50067.72
20201030	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	PACIFIC CARE CENTER	45066.93
20201030	OTHER ASSISTANCE PAYMENTS	COVID19 LTC CLEAN SUPP, PPE	LIFE CARE CENTER OF SULLIVAN	33336.9
20201030	OTHER ASSISTANCE PAYMENTS	COVID19LTC FAN,CLEANSUP,PPE	DELMAR GARDENS OF CREVE COEUR	11739.87
20201030	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	CLEARVIEW NURSING CENTER	10678.5
20201030	OTHER ASSISTANCE PAYMENTS	COVID19LTC AIRPURIFIERS,PPE	MOUNT CARMEL COMMUNITIES LLC	2536.44
20201030	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	3.27
20201030	UNIFORMS & CLOTHING	COVID: DISP GLOVES ACQU SHP	GRAINGER INDUSTRIAL SUPPLY	4561
20201030	UNIFORMS & CLOTHING	COVID19 FACE MSK ACQUF SHOP	GRAINGER INDUSTRIAL SUPPLY	581.2
20201102	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	27.9
20201102	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	18.6
20201102	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	18.6
20201102	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	18.6
20201102	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	9.3
20201102	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	9.3
20201102	OTHER SPECIFIC USE SUPPLIES	COVID19 FACE SHIELD	PROCUREMENT CARD PAYMENT	258.35
20201102	OTHER SPECIFIC USE SUPPLIES	COVID19 CR FACE SHIELD	PROCUREMENT CARD PAYMENT	-8.6
20201103	CUSTODIAL SUPPLIES	COVID19 MASKS	PROCUREMENT CARD PAYMENT	14.94
20201103	UNIFORMS & CLOTHING	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	65.97
20201104	AID EDUC INSTIT & SCHOOL DIST	COVID19 PAY,PPESTATE FAIR#2	STATE FAIR COMMUNITY COLLEGE	544949
20201104	AID EDUC INSTIT & SCHOOL DIST	COVID19FILTER,PPESTEPHENS#1	STEPHENS COLLEGE	65042
20201104	COVID TESTING SERVICES	21 COVID19 TESTING SEP 20	BJC HEALCARE AR-BILLING	79000
20201104	COVID TESTING SERVICES	21 COVID19 TESTING SEP 20	BJC HEALCARE AR-BILLING	29886
20201104	COVID TESTING SERVICES	21 COVID19 TESTING SEP 20	BJC HEALCARE AR-BILLING	17200
20201104	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	18.6
20201104	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	9.3
20201104	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	9.3
20201104	EXPRESS & FREIGHT SERVICES	COVID19 - PPE SHIPPING	COYOTE LOGISTICS LLC	1175
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	MEDICAL SOLUTIONS INC	326540
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 OXYGE	MCKESSON MEDICAL - SURGICAL	9888.9
20201104	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	FISHER SCIENTIFIC LLC	6078.8
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 GOWN,MASK	HUBERT COMPANY	6029.03
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 MASK,GOWN	HUBERT COMPANY	3587.11

20201104	MEDICAL & DENTAL SUPPLIES	COVID19 MASK,GOWN	HUBERT COMPANY	3517.13
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 MASK,GOWN	HUBERT COMPANY	3485.58
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	3131.21
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 CVRALL	MCKESSON MEDICAL - SURGICAL	2085.18
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 MASK,GOWN	HUBERT COMPANY	1512.58
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	HUBERT COMPANY	1504.48
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 MASK,GOWN	HUBERT COMPANY	1471.53
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	1371
20201104	MEDICAL & DENTAL SUPPLIES	COVID19CC202263001ISO GOWNS	MEDLINE INDUSTRIES INC	1211.22
20201104	MEDICAL & DENTAL SUPPLIES	COVID19MASK&SHIEL	HUBERT COMPANY	1165.2
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	963.2
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	962.5
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 MASK,GOWN	HUBERT COMPANY	938.12
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	853.83
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	849.4
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GLOVES	MCKESSON MEDICAL - SURGICAL	824.29
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	694.95
20201104	MEDICAL & DENTAL SUPPLIES	COVID19CC202263001 GLOVES	MEDLINE INDUSTRIES INC	653.72
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684001 MASKS	MCKESSON MEDICAL - SURGICAL	642.22
20201104	MEDICAL & DENTAL SUPPLIES	COVID19CC191684001 N95MASKS	MCKESSON MEDICAL - SURGICAL	642.22
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	640.8
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 MASK,GOWN	HUBERT COMPANY	624.29
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	597.4
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684001 GLOVES	MCKESSON MEDICAL - SURGICAL	594
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 MASK,GOWN	HUBERT COMPANY	584.79
20201104	MEDICAL & DENTAL SUPPLIES	CC181021001/C19/ PPE	INDUSTRIAL SOAP COMPANY	528.32
20201104	MEDICAL & DENTAL SUPPLIES	COVID19CC191684004 GLOVES,	HENRY SCHEIN INC	483.62
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GLOVES	MCKESSON MEDICAL - SURGICAL	469.8
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GLOVES	MCKESSON MEDICAL - SURGICAL	413.04
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	404.63
20201104	MEDICAL & DENTAL SUPPLIES	COVID19CC202263001 GLOVES	MEDLINE INDUSTRIES INC	402.12
20201104	MEDICAL & DENTAL SUPPLIES	COVID19MASK&SHIEL	HUBERT COMPANY	368.36
20201104	MEDICAL & DENTAL SUPPLIES	COVID19CC191684005 GLVS,SAN	MCKESSON MEDICAL - SURGICAL	359.1
20201104	MEDICAL & DENTAL SUPPLIES	COVID19CC191684005 SHOECVRS	MCKESSON MEDICAL - SURGICAL	321.12
20201104	MEDICAL & DENTAL SUPPLIES	COVID-19 CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	311.3
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC182584001 GOGGLES	GRAINGER	290.4
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684001 PPE	MCKESSON MEDICAL - SURGICAL	248.69
20201104	MEDICAL & DENTAL SUPPLIES	COVID19CC191684005 GLVS,SAN	MCKESSON MEDICAL - SURGICAL	248.55
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 GOWNS	HUBERT COMPANY	224.95
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	HUBERT COMPANY	194.45
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	HUBERT COMPANY	190.92
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	90.59
20201104	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	67
20201104	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	67
20201104	MEDICAL & DENTAL SUPPLIES	COVID-19 N95 MASKS	PROCUREMENT CARD PAYMENT	51.16
20201104	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	46.33
20201104	MEDICAL & DENTAL SUPPLIES	COVID-19 CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	26.82
20201104	MEDICAL & DENTAL SUPPLIES	COVID-19 CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	19.8
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTCPAY,PPE	WILSHIRE AT LAKEWOOD	223266.22
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	CROWLEY RIDGE CARE CENTER	41406.96
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC GOWNS,GLVS,MASKS	LIFE CARE CENTER OF	35798.28
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	MCDONALD COUNTY LIVING CENTER	34261.22
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	PARKSIDE MANOR	33824.38
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PAPRPROD,PPE	LEWIS AND CLARK GARDENS	32040.25
20201104	OTHER ASSISTANCE PAYMENTS	COVID19 LTC MASK,GLOVES,PPE	NORTHWOOD HILLS CARE CENTER	30490.17
20201104	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY,BARRIER,PPE	HILLCREST CARE CENTER	25167.39
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PAPRPROD,PPE	CUBA MANOR INC	23952.54
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	JONESBURG NURSING & RE	20032.2
20201104	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES	BOONE COUNTY SENIOR CITIZEN	17946.93
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC GLOVES,WIPES,PPE	DELMAR GARDENS OF CHESTERFIELD	17437.55
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	MONTICELLO HOUSE	16334.44
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	GAMMA ROAD LODGE	15693.73
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PAPRPROD,PPE	MOBERLY NURSING & REHAB	15517.55
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	WILLARD CARE CENTER	13374.41
20201104	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES	CAMELOT NURSING REHAB	12891.93
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	ASHLAND HEALTHCARE	12426.03
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	HARTVILLE CARE CENTER	12189.9
20201104	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY, GOWN,SOAP,	CHARLESTON MANOR	11752.75
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,BARRIER,PPE	CAMDENTON WINDSOR ESTATES	11162.85
20201104	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES	BOONE COUNTY SENIOR CITIZEN	10276.29
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PAPRPROD,PPE	GRAND RIVER HEALTH CARE	9461.07
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	GLASGOW GARDENS	8966.54
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	SMITHVILLE LIVING CENTER	8827.56
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	CURRENT RIVER NURSING CENTER	8625.61
20201104	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/MED	COMMUNITY MANOR	8167.1
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	FAYETTE CARING CENTER	7942.56
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	NEVADA NURSING & REHAB	7037.29
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC TRANSPORTTST,PPE	GARDEN CARE CENTER OF OFALLON	6209.79
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC TRANSPORT,PPE	GARDEN VIEW CARE CENTER OF CHE	4997
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	GERALD NURSING & REHAB	4600.35
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	ADVANCE NURSING CENTER	4566.83
20201104	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES	DELMAR GARDENS WEST OPERATING	4540.78
20201104	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	BLOOMFIELD LIVING CENTER	4477.77
20201104	OTHER SPECIFIC USE SUPPLIES	COVID: PPE WRHS HEAVY DUTY	ULINE INC	247.68
20201104	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RAW MAT PPE	BK DISTRIBUTING LLC	248000
20201104	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RAW MAT PPE	ERIC SCOTT LEATHERS LLC	143862.55
20201104	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	PLASTIC MOLDING COMPANY	45555
20201104	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	PLASTIC MOLDING COMPANY	15600



20201104	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	PLASTIC MOLDING COMPANY	10380.83
20201104	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RETOOL PPE	THE COLLECTIVE THREAD	7758.6
20201104	PROGRAM REIMBURSEMENTS	COVID19CHILDCARE GLVS,THERM	URBAN SPROUTS	4517
20201104	PROGRAM REIMBURSEMENTS	COVID-19 PPE/CLEANING SUPP	KIDS WORLD NORTH LLC	3614
20201104	PROGRAM REIMBURSEMENTS	COVID19CHILDCARE GLVS,THERM	JUST 4 US CHILDCARE INC	3461.21
20201104	PROGRAM REIMBURSEMENTS	COVID19 CHILDCARE GOWNS	HAZELWOOD CHILD DEVELOPMENT	3141
20201104	PROGRAM REIMBURSEMENTS	COVID19CHILDCARE SINK,PPE	HAPPY DAY PRESCHOOL	2808.68
20201104	PROGRAM REIMBURSEMENTS	COVID19CHILDCARE PAY,PPE	FAITH S IN HOME CHILD DEVELOPM	1808
20201104	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	PLASTIC MOLDING COMPANY	1696.2
20201105	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UPS FREIGHT	7988.21
20201105	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	6469.25
20201105	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	1453.69
20201105	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	1418.52
20201105	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	ECLAT COMMERCE INC	4429512.5
20201105	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	WW GRAINGER	686200
20201105	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	WW GRAINGER	171550
20201105	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	WW GRAINGER	171550
20201105	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	WW GRAINGER	171550
20201105	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	149018.03
20201105	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	WW GRAINGER	99567.62
20201105	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MCKESSON MEDICAL-SURGICAL INC	70560
20201105	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	WW GRAINGER	42098.37
20201105	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MEDLINE INDUSTRIES INC	16561.98
20201105	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	TBS BUSINESS SOLUTIONS USA	14145
20201105	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	TBS BUSINESS SOLUTIONS USA	11385
20201105	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MEDLINE INDUSTRIES INC	11150.64
20201105	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	MCKESSON MEDICAL-SURGICAL INC	2379.41
20201105	MEDICAL & DENTAL SUPPLIES	COVID19 C191684004 GLOVES	HENRY SCHEIN INC	317.3
20201105	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	WW GRAINGER	274.48
20201105	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MEDLINE INDUSTRIES INC	54.66
20201105	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/CLEANING SUPP	JORDAN CREEK NURSING & REHAB	35142.89
20201105	OTHER ASSISTANCE PAYMENTS	COVID19LTC THERM,CLEAN,PPE	LIFE CARE CENTER OF CARROLLTON	19580.46
20201105	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/OT-SALARY	ELDON NURSING & REHAB	12172.92
20201105	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/CLEAN SUPPLIE	CALIFORNIA CARE CENTER	8374.76
20201105	OTHER EQUIPMENT RENTALS	COVID19-PPE	JOBSITE SANITARY TOILETS LLC	150
20201105	PROGRAM REIMBURSEMENTS	COVID19 RAW MAT/SUPPLY PPE	HABITATA BUILDING PRODUCTS LLC	100525
20201105	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	ANGSTROM MANUFACTURING INC	99025.59
20201105	PROGRAM REIMBURSEMENTS	COVID19 RAWMAT/EQUIP PPE	CHEMISPHERE CORPORATION	79643.69
20201105	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	ANGSTROM MANUFACTURING INC	55506
20201105	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	HEARTH AND HOME LLC	41414.89
20201105	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	MK MACHINING LLC	30000
20201105	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	CHEMISPHERE CORPORATION	9379.01
20201105	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RAW MAT PPE	SUGARMILL DISTILLING LLC	7625
20201105	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COSTS PPE	THE COLLECTIVE THREAD	5740
20201105	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	MILBANK MANUFACTURING CO	115.53
20201105	PROPANE	COVID: PPE WRHS PROPANE REF	US RENTS IT	48
20201106	CLOTHING SUPPLIES	COVID19 CC202263001 GOWNS	MEDLINE INDUSTRIES INC	247.26
20201106	EXPRESS & FREIGHT SERVICES	COVID19-CS170462002 PPESHIP	UNITED PARCEL SERVICE	10100.42
20201106	LABORATORY SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	172.5
20201106	LABORATORY SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	104.5
20201106	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MEDLINE INDUSTRIES INC	21590.7
20201106	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 ISO GNS	MCKESSON MEDICAL - SURGICAL	5790
20201106	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 ISO GWN	MCKESSON MEDICAL - SURGICAL	5790
20201106	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 ISO GWN	MCKESSON MEDICAL - SURGICAL	5790
20201106	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 ISO GWN	MCKESSON MEDICAL - SURGICAL	5790
20201106	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 ISO GWN	MCKESSON MEDICAL - SURGICAL	5790
20201106	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GLVS	MCKESSON MEDICAL - SURGICAL	896.7
20201106	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLVS	HENRY SCHEIN INC	855.3
20201106	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GLVS	MCKESSON MEDICAL - SURGICAL	395.4
20201106	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GLVS	MCKESSON MEDICAL - SURGICAL	24.3
20201106	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GLVS	MCKESSON MEDICAL - SURGICAL	24.3
20201106	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GLVS	MCKESSON MEDICAL - SURGICAL	16.2
20201106	MENTAL HEALTH PAYMNTS-1099 YES	COVID19MASKSGLOVE	K&J CARE ENTERPRISE INC	632
20201106	OTHER IN-STATE TRAVEL EXPENSES	COVID19 GLOVES,SANITIZER,	MILLER, ALEXANDER J	40.47
20201106	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19 HEAD COVER/NETS	AMAZON CAPITAL SERVICES INC	130
20201106	OTHER SPECIFIC USE SUPPLIES	COVID19 FACESHIELDS	PROCUREMENT CARD PAYMENT	1090
20201106	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	O'REILLY AUTOMOTIVE STORES INC	108.18
20201106	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	O'REILLY AUTOMOTIVE STORES INC	36.06
20201106	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	O'REILLY AUTOMOTIVE STORES INC	18.03
20201106	UNIFORMS & CLOTHING	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	135.38
20201109	CUSTODIAL SUPPLIES	COVID-19 CC182584001MASKBAG	GRAINGER	451.32
20201109	MEDICAL & DENTAL SUPPLIES	COVID19-CC202263001 PPE	MEDLINE INDUSTRIES INC	59800
20201109	MEDICAL & DENTAL SUPPLIES	COVID19-CC202263001 PPE	MEDLINE INDUSTRIES INC	8970
20201109	MEDICAL & DENTAL SUPPLIES	COVID19-CC202263001 PPE	MEDLINE INDUSTRIES INC	4333.8
20201109	OFFICE SUPPLIES	COVID19-BOXES FOR PPE SHIPP	MISSOURI VOCATIONAL	184
20201109	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	BROOK VIEW NURSING HOME	334500
20201109	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PAPRPROD,PPE	TROY MANOR	42729.41
20201109	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	JOPLIN GARDENS	36332.34
20201109	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/CLEAN SUPPLIES	LEBANON NORTH NURSING & REHAB	30394.66
20201109	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PPERPROD,PPE	STRAFFORD CARE CENTER	29855.32
20201109	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	LINCOLN COUNTY NURSING & REHAB	28373.07
20201109	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,BARRIER,PPE	TROY MANOR	25990
20201109	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	MARK TWAIN CARING CENTER	23709.63
20201109	OTHER ASSISTANCE PAYMENTS	COVID19LTC SANITIZER,PPE	LINDEN WOODS VILLAGE	20693.41
20201109	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	MARYVILLE LIVING CENTER	17572.58
20201109	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	RIDGEVIEW LIVING COMMUNITY	9019.03
20201109	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	ROCKY RIDGE MANOR	8097.99
20201109	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/CLEAN SUPPLIE	LINDEN WOODS VILLAGE	8003.61

20201109	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	GLENWOOD HEALTHCARE	6620.7
20201109	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAPERPROD,PPE,	FOUNTAINBLEAU LODGE	4101.76
20201109	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUPP, PPE	FOUNTAINBLEAU LODGE	3743.59
20201109	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUPP,PPE	LEWIS COUNTY NURSING HOME	2527.59
20201109	OTHER ASSISTANCE PAYMENTS	COVID19LTC PPRPROD,BLEACH,	FOUNTAINBLEAU LODGE	988.72
20201109	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANER,TWLS,PPE	FOUNTAINBLEAU LODGE	880.61
20201109	OTHER EQUIPMENT	COVID19 CPR MASKS	ALLIED 100 LLC	119.85
20201109	OTHER SPECIFIC USE SUPPLIES	COVID19 MASKS	GRAINGER INDUSTRIAL SUPPLY	200
20201109	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	GRAINGER INDUSTRIAL SUPPLY	17.18
20201109	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	STAPLES ADVANTAGE	15.26
20201109	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	STAPLES ADVANTAGE	8.02
20201109	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	STAPLES ADVANTAGE	6.54
20201109	PROGRAM REIMBURSEMENTS	COVID19 EQP/RAWMAT/RETL PPE	TRIPPNT INC	300000
20201109	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COST PPE	SUGARMILL DISTILLING LLC	267004.34
20201109	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	IMPROVEYES INC	102939.15
20201109	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	THE COLLECTIVE THREAD	61275
20201109	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	ROI INTERNATIONAL LLC	60000
20201109	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	MILBANK MANUFACTURING CO	31425
20201109	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	MK MACHINING LLC	31155
20201109	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	MILBANK MANUFACTURING CO	27994
20201109	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	THE COLLECTIVE THREAD	14176
20201109	PROGRAM REIMBURSEMENTS	COVID19 RAWMAT/SUPPLIES PPE	HABITATA BUILDING PRODUCTS LLC	9702
20201109	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	MILBANK MANUFACTURING CO	7992
20201109	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIAL PPE	MILBANK MANUFACTURING CO	4875
20201109	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIAL PPE	MILBANK MANUFACTURING CO	2561
20201109	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIAL PPE	MILBANK MANUFACTURING CO	1625
20201110	CUSTODIAL SUPPLIES	COVID19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	44.9
20201110	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS, CLEAN SUPP	STAPLES ADVANTAGE	112.09
20201110	MEDICAL & DENTAL SUPPLIES	COVID19 FACE MASKS	STAPLES ADVANTAGE	98.16
20201110	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	FORSYTH CARE CENTER	37894.16
20201110	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	VILLAGES OF ST PETERS	19945.9
20201110	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	COUNTRY CLUB CARE CENTER OF	19728.57
20201112	AID EDUC INSTIT & SCHOOL DIST	COVID19 PAY, PPE UCMO#3	UNIVERSITY OF CENTRAL MISSOURI	174928.43
20201112	CUSTODIAL SUPPLIES	COVID19 C182584001 PPE/BAGS	GRAINGER	477.07
20201112	ENGINEERING & TECHNICAL SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	66.3
20201112	EXPRESS & FREIGHT SERVICES	COVID10 SHIPPING PPE	UNITED PARCEL SERVICE	55.23
20201112	EXPRESS & FREIGHT SERVICES	COVID10 SHIPPING PPE	UNITED PARCEL SERVICE	22.57
20201112	LAUNDRY & LINEN SUPPLIES	COVID19 C191684005 LINENS	MCKESSON MEDICAL - SURGICAL	4056.46
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 C191684005 GOWNS	MCKESSON MEDICAL - SURGICAL	17360
20201112	MEDICAL & DENTAL SUPPLIES	COVID19CC191684005GOWN,SANI	MCKESSON MEDICAL - SURGICAL	8207.2
20201112	MEDICAL & DENTAL SUPPLIES	COVID19C182584001FILTER,PPE	GRAINGER	5780.7
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 N95 MASKS	MCKESSON MEDICAL-SURGICAL INC	2568.88
20201112	MEDICAL & DENTAL SUPPLIES	COVID19CC202263001 GLOVES	MEDLINE INDUSTRIES INC	1961.5
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	1776.8
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 N95 MASKS	MCKESSON MEDICAL-SURGICAL INC	1284.44
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	749.5
20201112	MEDICAL & DENTAL SUPPLIES	COVID-19 #CC191684005 BPCUF	MCKESSON MEDICAL - SURGICAL	690
20201112	MEDICAL & DENTAL SUPPLIES	COVID19CC191684005 MASKS	MCKESSON MEDICAL - SURGICAL	642.22
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 C191684004 N95 MASK	HENRY SCHEIN INC	425.28
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	423.59
20201112	MEDICAL & DENTAL SUPPLIES	COVID19C191684001 GLVS,SYRG	MCKESSON MEDICAL - SURGICAL	335.91
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 C182584001 PPE	GRAINGER	292.75
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 C182584001 PPE	GRAINGER	292.75
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 C182584001HOODMASK	GRAINGER	292.75
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 C182584001HOODMASK	GRAINGER	292.75
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 C182584001HOODMASK	GRAINGER	292.75
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 C182584001HOODMASK	GRAINGER	292.75
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 C182584001 PPE	GRAINGER	292.75
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 C182584001 PPE	GRAINGER	292.75
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 C182584001 PPE	GRAINGER	292.75
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	100
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	41.6
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	PROCUREMENT CARD PAYMENT	12.79
20201112	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	STAPLES ADVANTAGE	11.84
20201112	MEDICAL & DENTAL SUPPLIES	COVID19C191684005 GOWN CRDT	MCKESSON MEDICAL - SURGICAL	-315
20201112	MENTAL HEALTH PAYMNTS-1099 YES	COVID19 PPE,CLEAN	SOUTH HAVEN RESIDENTIAL CARE	1047
20201112	OFFICE SUPPLIES	COVID19 GLOVES & WIPES	PROCUREMENT CARD PAYMENT	17322
20201112	OFFICE SUPPLIES	COVID19 WIPES,GLOVES,SPRAY	BPI SUPPLY	2514.52
20201112	OFFICE SUPPLIES	COVID19-BOXES FOR PPE SHIPP	MISSOURI VOCATIONAL	1932
20201112	OFFICE SUPPLIES	COVID19-BOXES FOR PPE SHIPP	MISSOURI VOCATIONAL	508.5
20201112	OFFICE SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	17.98
20201112	OFFICE SUPPLIES	COVID19 CREDIT GLOVES	PROCUREMENT CARD PAYMENT	-1231.75
20201112	OTHER ASSISTANCE BENEFITS	COVID19LTC PAY,PPRPROD,PPE	LEBANON SOUTH NURSING & REHAB	32387.53
20201112	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PPRPROD,PPE	THE VILLA AT BLUE RIDGE	28767.33
20201112	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	HERMITAGE NURSING & REHAB	27631.76
20201112	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	N & R OF WARRENTON INC	27505.84
20201112	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	WINDSOR HEALTHCARE & REHAB	24399.85
20201112	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,GOWNS,PPE	HILLVIEW NURSING AND REHAB	19859.8
20201112	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	SILEX COMMUNITY CARE	19725.33
20201112	OTHER ASSISTANCE PAYMENTS	COVID19LTC VITALSIGNMON,PPE	WESTVIEW NURSING HOME	17033.94
20201112	OTHER ASSISTANCE PAYMENTS	COVID19LTC VITALMONITOR,PPE	DELMAR GARDENS WEST OPERATING	16236.15
20201112	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PPRPROD, PPE	RIVER CITY LIVING COMMUNITY	11188.64
20201112	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PPRPROD,PPE	MINER NURSING CENTER	9754.11
20201112	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	MONITEAU CARE CENTER	6554.16
20201112	OTHER ASSISTANCE PAYMENTS	COVID19LTC MASKS,GOWNS,GLAS	LEWIS COUNTY NURSING HOME	6236.26
20201112	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUP, PPE	COMMUNITY MANOR	4753.59
20201112	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUP,PPE	COMMUNITY MANOR	3892.19
20201112	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUP, PPE	COMMUNITY MANOR	2487.47



20201112	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUPP, PPE	COMMUNITY MANOR	1611.74
20201112	OTHER SPECIFIC USE SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	22.99
20201112	OTHER SPECIFIC USE SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	17.99
20201112	PROGRAM REIMBURSEMENTS	COVID19-PPE	BOONE COUNTY FIRE PROTECTION	100000
20201112	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	KESSLER CONTAINERS LTD	49400
20201112	PROGRAM REIMBURSEMENTS	COVID19MEATPROCESSINGGRANT	CENTRAL MISSOURI MEAT AND	26254.35
20201112	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	MILBANK MANUFACTURING CO	23450
20201112	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	MILBANK MANUFACTURING CO	22300
20201112	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	MILBANK MANUFACTURING CO	12312
20201112	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	MILBANK MANUFACTURING CO	3959.37
20201112	UNIFORMS & CLOTHING	COVID19 MASKS,WIPES,SANIT	PROCUREMENT CARD PAYMENT	354.11
20201112	UNIFORMS & CLOTHING	COVID19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	68.88
20201113	AID EDUC INSTIT & SCHOOL DIST	COVID-19 PPE/CLEAN DPR31574	LACLEDE INDUSTRIES	12600
20201113	CUSTODIAL SUPPLIES	COVID19 WIPES & GLOVES	PROCUREMENT CARD PAYMENT	77.8
20201113	CUSTODIAL SUPPLIES	COVID19 FACE SHIELDS	PROCUREMENT CARD PAYMENT	53.85
20201113	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	52.86
20201113	CUSTODIAL SUPPLIES	COVID19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	35.92
20201113	CUSTODIAL SUPPLIES	COVID19 GLOVES&CLEANSUPP	FASTENAL COMPANY	29.27
20201113	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	27.9
20201113	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	27.9
20201113	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	18.6
20201113	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	15.54
20201113	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	9.3
20201113	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	9.3
20201113	EDUCATION ASSIST PAYMENTS	COVID-19 SCHOMBURG TRAIN	IOWA WESTERN COMMUNITY	3707
20201113	EDUCATION ASSIST PAYMENTS	COVID-19 60 FACE MASKS	WORKFORCE INVESTMENT BOARD OF	339
20201113	EDUCATION ASSIST PAYMENTS	COVID19 100 CLOTH FACEMASKS	WORKFORCE INVESTMENT BOARD OF	96
20201113	EDUCATION ASSIST PAYMENTS	COVID19 FACESHIELD STAFFMJC	WORKFORCE INVESTMENT BOARD OF	17.05
20201113	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UPS FREIGHT	5400.73
20201113	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/PAY	OAK GROVE NURSING & REHAB	78642.39
20201113	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/MED EQUIP/PAY	PARKWAY HEALTH CARE CENTER	64371.22
20201113	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,BARRIERS,PPE	TABLEROCK HEALTHCARE	61715.05
20201113	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	CEDARCREST MANOR	48490.71
20201113	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/PAY	NEW HAVEN LIVING CENTER	44572.32
20201113	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/PAY	GOOD SAMARITAN CARE CENTER	35514.85
20201113	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,BARRIERS,PPE	VILLAGES OF JACKSON CREEK LLC	32705.52
20201113	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/PAY	SHEPHERD OF THE HILLS LIVING C	30657.2
20201113	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/PAY	NEW MADRID LIVING CENTER	26566.86
20201113	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUP,PPE,PPR	SRZ OP RIVERBEND LLC	25144.97
20201113	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/PAY	CLARU DEVILLE NURSING & REHAB	24145.97
20201113	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/PAY	GARDEN VIEW CARE CENTER	12286.22
20201113	OTHER ASSISTANCE PAYMENTS	COVID19LTC PPRPROD, GLOVES	NHC HEALTHCARE KENNETT	10309.8
20201113	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	NEVADA NURSING & REHAB	7287.15
20201113	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PPRPROD,PPE	MALDEN NURSING & REHAB	5352.41
20201113	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/PAY	EAST PRAIRIE NURSING CENTER	4847.53
20201113	OTHER LABORATORY & MEDICAL SUPPLIES	COVID19 FACE SHLD	OFFICE DEPOT LLC	8747.5
20201113	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES,SANITIZER	PROCUREMENT CARD PAYMENT	204.53
20201113	OTHER SPECIFIC USE SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	44.99
20201113	OTHER SPECIFIC USE SUPPLIES	COVID19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	34
20201113	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RAW MAT PPE	MARCO GROUP INCORPORATED	151321.15
20201113	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	HEARTH AND HOME LLC	113900
20201113	PROGRAM REIMBURSEMENTS	COVID19 RAW MAT/RETOOL PPE	NANOVA BIOMATERIALS INC	95772.42
20201113	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	FARM AND SPIRIT INC	26400
20201113	PROGRAM REIMBURSEMENTS	COVID19 DESGN/ENGNERNG PPE	MILBANK MANUFACTURING CO	10620
20201113	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	MILBANK MANUFACTURING CO	9175
20201113	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	MILBANK MANUFACTURING CO	6334.2
20201113	PROGRAM REIMBURSEMENTS	COVID-19 PPE/SUPPLIES/PAY	GREENTREE LEARNING AND CHILD	3999.14
20201113	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING PPE	HABITATA BUILDING PRODUCTS LLC	3500
20201113	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	HABITATA BUILDING PRODUCTS LLC	393
20201113	UNIFORMS & CLOTHING	COVID19 MASKS	PROCUREMENT CARD PAYMENT	99.98
20201113	UNIFORMS & CLOTHING	COVID19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	54.9
20201116	AID EDUC INSTIT & SCHOOL DIST	COVID19 PPE COLUMBIACOLL#3	COLUMBIA COLLEGE	37339.05
20201116	AID EDUC INSTIT & SCHOOL DIST	COVID19 PPE COLUMBIACOLL#2	COLUMBIA COLLEGE	15010.55
20201116	AID EDUC INSTIT & SCHOOL DIST	COVID19 DPR 31544 PPE/SUPPL	PEMISCOT PROGRESSIVE	10010
20201116	AID EDUC INSTIT & SCHOOL DIST	COVID19 PPE,SUPPLIES UM#88	UNIVERSITY OF MO-COLUMBIA	12.36
20201116	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UNITED PARCEL SERVICE	11224.04
20201116	MEDICAL & DENTAL EQUIPMENT	COVID19 #CC202263001 PPE	MEDLINE INDUSTRIES INC	6493.42
20201116	MEDICAL & DENTAL SUPPLIES	COVID19 N95 MASKS	POSITIVE PROMOTIONS	7363.72
20201116	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 ISO GOW	MCKESSON MEDICAL - SURGICAL	4632
20201116	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	GRAINGER	4507.75
20201116	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 ISOGOWN	MCKESSON MEDICAL - SURGICAL	3860
20201116	MEDICAL & DENTAL SUPPLIES	COVID CONT#CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	3406.7
20201116	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GLOVES	MCKESSON MEDICAL - SURGICAL	1571.36
20201116	MEDICAL & DENTAL SUPPLIES	COVID19CC191684005MASK,GOWN	MCKESSON MEDICAL - SURGICAL	1303.42
20201116	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 SHOEVR	MCKESSON MEDICAL - SURGICAL	759.25
20201116	MEDICAL & DENTAL SUPPLIES	COVID19 #CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	621.56
20201116	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GLOVES	MCKESSON MEDICAL - SURGICAL	426.12
20201116	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 SMRTPAD	MCKESSON MEDICAL - SURGICAL	324.36
20201116	MEDICAL & DENTAL SUPPLIES	COVID19 FACE CVRS	MISSOURI VOCATIONAL	320
20201116	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 F SHIEL	MCKESSON MEDICAL - SURGICAL	273.8
20201116	MENTAL HEALTH PAYMNTS-1099 YES	COVID-19 PPE	OZARKS MEDICAL CENTER	25474.6
20201116	MENTAL HEALTH PAYMNTS-1099 YES	COVID19 PAY,PPE	CENTER FOR LIFE SOLUTIONS INC	8245.61
20201116	MENTAL HEALTH PAYMNTS-1099 YES	COVID19ZOOM,PPE	FAMILY SELF HELP CENTER INC	2060.32
20201116	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PAPERPROD,PPE	SRZ OP ROLLA LLC	21434.35
20201116	OTHER ASSISTANCE PAYMENTS	COVID19LTC LIFT,BARRIER,PPE	SYLVIA G THOMPSON RESIDENCE	21401.26
20201116	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,LAPTOP,PPE	GOOD SAMARITAN CARE CENTER	9581.78
20201116	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,NOTIFSYS,PPE	GOOD SAMARITAN CARE CENTER	2109.51
20201116	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	SHOW ME ETHANOL LLC	300000

20201116	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	THE COLLECTIVE THREAD	159315
20201116	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	NANOVA BIOMATERIALS INC	125000
20201116	PROGRAM REIMBURSEMENTS	COVID19 ETL/RAWMAT/EQUIPPE	ARCH PACKAGING TECHNOLOGIES	118018.37
20201116	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	RNN ENTERPRISES LLC	87745
20201116	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	ROI INTERNATIONAL LLC	60000
20201116	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	FARM AND SPIRIT INC	45142.7
20201116	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	MIDWEST MEDICAL & APPAREL LLC	23280
20201116	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COSTS PPE	LOGIC SYSTEMS SOUND & LIGHTING	23170
20201116	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	THE COLLECTIVE THREAD	15256
20201116	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	DIGITAL DESIGN LLC	10600
20201116	PROGRAM REIMBURSEMENTS	COVID19 RAW MAT PPE	THE COLLECTIVE THREAD	6700
20201116	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	DIGITAL DESIGN LLC	4807.95
20201116	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	HABITATA BUILDING PRODUCTS LLC	1250
20201116	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	FARM AND SPIRIT INC	597.97
20201117	MEDICAL & DENTAL SUPPLIES	COVID19 C191684005 GOWNS	MCKESSON MEDICAL - SURGICAL	9940
20201117	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	FISHER SCIENTIFIC LLC	3340
20201117	MEDICAL & DENTAL SUPPLIES	COVID19C182584003 RESPIRATO	FASTENAL COMPANY	3215.63
20201117	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	FISHER SCIENTIFIC LLC	3072.8
20201117	MEDICAL & DENTAL SUPPLIES	COVID19 C191684005 EYESHIEL	MCKESSON MEDICAL - SURGICAL	779.74
20201117	MEDICAL & DENTAL SUPPLIES	COVID19C191684001GLOVES,BAG	MCKESSON MEDICAL-SURGICAL	358.76
20201117	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	POINT LOOKOUT NURSING & REHAB	36027.98
20201117	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PAPERPROD,PPE	GOOD SAMARITAN CARE CENTER	30401.35
20201117	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAPERPROD,PPE	SRZ OP ROLLA LLC	25463.05
20201117	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PAPERPROD,PPE	NHC HEALTHCARE WEST PLAINS	13349
20201117	OTHER ASSISTANCE PAYMENTS	COVID19LTC O2CONC,CARTS,PPE	RIVERVIEW AT THE PARK CARE AND	3390.35
20201117	UNIFORMS & CLOTHING	COVID19CC191684001N95 MASKS	MCKESSON MEDICAL-SURGICAL INC	2568.88
20201117	UNIFORMS & CLOTHING	COVID19CC191684001N95 MASKS	MCKESSON MEDICAL-SURGICAL INC	1284.44
20201118	AID EDUC INSTIT & SCHOOL DIST	COVID19PPE,LOCK,STLOUISCC#6	ST LOUIS COMMUNITY COLLEGE	217874.46
20201118	CUSTODIAL SUPPLIES	COVID19GLOVES,BLEACH,SPRY	PROCUREMENT CARD PAYMENT	1473.6
20201118	EDUCATION ASSIST PAYMENTS	COVID19 MASKS COMPS CLEAN	NEMO WORKFORCE INVESTMENT	15933.22
20201118	EDUCATION ASSIST PAYMENTS	COVID19 MASKS COMPS CLEAN	NEMO WORKFORCE INVESTMENT	8851.11
20201118	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	8388.87
20201118	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	4610.48
20201118	EXPRESS & FREIGHT SERVICES	COVID19 SHIP PPE	PROCUREMENT CARD PAYMENT	5.99
20201118	LAW ENFORCEMENT SUPPLIES	LE SUPPLIES GLOVES SIZE L	GRAINGER	85.96
20201118	MEDICAL & DENTAL SUPPLIES	GLOVES & MASK	CROWDHEALTH SOURCE LLC	82000
20201118	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MORNING STAR INDUSTRIES, INC	56000
20201118	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	WW GRAINGER	29609.53
20201118	MEDICAL & DENTAL SUPPLIES	C191684005 COVID19 GOWNS	MCKESSON MEDICAL - SURGICAL	11670
20201118	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MEDLINE INDUSTRIES INC	7652.4
20201118	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MEDLINE INDUSTRIES INC	5138.04
20201118	MEDICAL & DENTAL SUPPLIES	PPE DISPOSABLE FACE SHIELDS	AMERICAN PPE SUPPLIES LLC	4590
20201118	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GOWNS	MCKESSON MEDICAL - SURGICAL	2991.5
20201118	MEDICAL & DENTAL SUPPLIES	C182584001 COVID19 SHOE CVS	GRAINGER	1214.16
20201118	MEDICAL & DENTAL SUPPLIES	C191684005 COVID N95 MASKS	MCKESSON MEDICAL - SURGICAL	884.38
20201118	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GOWNS	MCKESSON MEDICAL - SURGICAL	723
20201118	MEDICAL & DENTAL SUPPLIES	C182584001 COVID19 GLOVES	GRAINGER	639.5
20201118	MEDICAL & DENTAL SUPPLIES	C191684005 COVID19 SHOE CVR	MCKESSON MEDICAL - SURGICAL	627.12
20201118	MEDICAL & DENTAL SUPPLIES	C191684001 COVID19 GLOVES	MCKESSON MEDICAL - SURGICAL	367.96
20201118	MEDICAL & DENTAL SUPPLIES	C191684004 COVID19 GLOVES	HENRY SCHEIN INC	356.9
20201118	MEDICAL & DENTAL SUPPLIES	C182584001 COVID19 GLOVES	GRAINGER	255.8
20201118	MEDICAL & DENTAL SUPPLIES	C182584001 COVID19 GLOVES	GRAINGER	238
20201118	MEDICAL & DENTAL SUPPLIES	C191684005 COVID19 SKIN THR	MCKESSON MEDICAL - SURGICAL	125
20201118	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	PORTAGEVILLE HEALTH CARE CENTE	41694.31
20201118	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEAN,AIRPUR,PPE	ASHLEY MANOR CARE CENTER	30445.21
20201118	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,BARRIERS,PPE	MACON HEALTH CARE CENTER	28496.03
20201118	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PAPERPROD,PPE	POTOSI MANOR	21095.44
20201118	OTHER ASSISTANCE PAYMENTS	COVID19LTC VSMON,O2CONC,PPE	MILAN HEALTH CARE CENTER	17319.47
20201118	OTHER ASSISTANCE PAYMENTS	COVID19LTC GLOVES,MASKS,PPE	LABELLE MANOR CARE CENTER	1545.09
20201118	OTHER SPECIFIC USE SUPPLIES	COVID: PPE WRHS BOXES FOR S	ULINE INC	966.07
20201118	PROGRAM REIMBURSEMENTS	COVID19 RAW MAT/RETOOL PPE	BRENNTAG MID-SOUTH	393300
20201118	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	PPE MFG USA CORP	393300
20201118	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/TRAIN/TECHPPE	DIGITAL DESIGN LLC	151095
20201118	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	ANGSTROM MANUFACTURING INC	99025.59
20201118	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	MK MACHINING LLC	60000
20201118	PROGRAM REIMBURSEMENTS	COVID19 RAW MAT PPE	ANGSTROM MANUFACTURING INC	55506
20201118	PROGRAM REIMBURSEMENTS	COVID19 DESIGN/EQUIP PPE	PLASTIC MOLDING COMPANY	51148.78
20201118	PROGRAM REIMBURSEMENTS	COVID19 RETOOL/TECH/FDA PPE	NANOVA BIOMATERIALS INC	29219
20201118	PROGRAM REIMBURSEMENTS	COVID19 RAW MAT PPE	FARM AND SPIRIT INC	24000
20201118	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	FARM AND SPIRIT INC	2965
20201118	UNIFORMS & CLOTHING	COVID19-FACEMASKS	PROCUREMENT CARD PAYMENT	239.39
20201118	UNIFORMS & CLOTHING	COVID19-FACEMASKS	PROCUREMENT CARD PAYMENT	90.8
20201118	UNIFORMS & CLOTHING	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	39.7
20201119	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GOWNS	MCKESSON MEDICAL - SURGICAL	4632
20201119	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GOWNS	MCKESSON MEDICAL - SURGICAL	4342.5
20201119	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 ISOGOWN	MCKESSON MEDICAL - SURGICAL	3860
20201119	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 ISOGOWN	MCKESSON MEDICAL - SURGICAL	3088
20201119	MEDICAL & DENTAL SUPPLIES	CC191684005/C19/N95 MASKS	MCKESSON MEDICAL - SURGICAL	2568.88
20201119	MEDICAL & DENTAL SUPPLIES	CC191684005/COVID19/ PPE	MCKESSON MEDICAL - SURGICAL	2437.97
20201119	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 ISOGOWN	MCKESSON MEDICAL - SURGICAL	2316
20201119	MEDICAL & DENTAL SUPPLIES	CC202263001 COVID19 GLOVES	MEDLINE INDUSTRIES INC	2307.07
20201119	MEDICAL & DENTAL SUPPLIES	COVID CONT#CC191684002 PPE	CONCORDANCE HEALTHCARE	2047.93
20201119	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GLOVES	MCKESSON MEDICAL - SURGICAL	1779.97
20201119	MEDICAL & DENTAL SUPPLIES	CC191684005 N-95 MASKS	MCKESSON MEDICAL - SURGICAL	1284.44
20201119	MEDICAL & DENTAL SUPPLIES	CC191684005/C19/N95 MASKS	MCKESSON MEDICAL - SURGICAL	1284.44
20201119	MEDICAL & DENTAL SUPPLIES	COVID CONT#CC191684004 PPE	HENRY SCHEIN INC	1049.2
20201119	MEDICAL & DENTAL SUPPLIES	CC191684004/C19/ PPE	HENRY SCHEIN INC	853.95
20201119	MEDICAL & DENTAL SUPPLIES	CC191684004/COVID19/ PPE	HENRY SCHEIN INC	836

20201119	MEDICAL & DENTAL SUPPLIES	CC182584001/C19/PPE-GLASSES	GRAINGER	729
20201119	MEDICAL & DENTAL SUPPLIES	CC191684004/COVID19/ PPE	HENRY SCHEIN INC	699.8
20201119	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GLOVES,	MCKESSON MEDICAL - SURGICAL	484.7
20201119	MEDICAL & DENTAL SUPPLIES	CC181021001/COVID 19/ PPE	INDUSTRIAL SOAP COMPANY	396.24
20201119	MEDICAL & DENTAL SUPPLIES	CC191684005/COVID19/ PPE	MCKESSON MEDICAL - SURGICAL	374
20201119	MEDICAL & DENTAL SUPPLIES	CC191684004/COVID19 FSHLDS	HENRY SCHEIN INC	227.15
20201119	MEDICAL & DENTAL SUPPLIES	COVID CONT#CC191684004 PPE	HENRY SCHEIN INC	213.84
20201119	MEDICAL & DENTAL SUPPLIES	CC191684004/COVID19/ PPE	HENRY SCHEIN INC	212.8
20201119	MEDICAL & DENTAL SUPPLIES	CC182584005 COVID19 GOGGLES	GRAINGER INDUSTRIAL SUPPLY	178.8
20201119	MEDICAL & DENTAL SUPPLIES	COVID19 PAPER BAGS-PPE	PROCUREMENT CARD PAYMENT	126.12
20201119	MEDICAL & DENTAL SUPPLIES	C19/PPE	SHARE CORPORATION	123.55
20201119	MEDICAL & DENTAL SUPPLIES	COVID19 PAPER BAGS -PPE	PROCUREMENT CARD PAYMENT	122.88
20201119	MEDICAL & DENTAL SUPPLIES	CC182584001/C19/PPE GLASSES	GRAINGER	88.07
20201119	MEDICAL & DENTAL SUPPLIES	COVID CONT#CC191684004 PPE	HENRY SCHEIN INC	81.86
20201119	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/CLEAN SUPPLIES	CARROLL HOUSE	14159.54
20201119	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/CLEANING SUPPL	OSAGE BEACH REHABILITATION & H	5955.14
20201119	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	PLASTIC MOLDING COMPANY	106295
20201119	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RETOOL PPE	GREEN RESOURCES CONSULTING	84797.71
20201119	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RAW MAT PPE	DIGITAL DESIGN LLC	16963.77
20201119	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	DIGITAL DESIGN LLC	11999
20201119	PROGRAM REIMBURSEMENTS	COVID19 TECHNOLOGY PPE	DIGITAL DESIGN LLC	5400
20201119	UNIFORMS & CLOTHING	COVID19 MASKS	PROCUREMENT CARD PAYMENT	180
20201119	UNIFORMS & CLOTHING	COVID19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	170.7
20201119	UNIFORMS & CLOTHING	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	26.59
20201120	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UPS FREIGHT	8759.32
20201120	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 ISO GNS	MCKESSON MEDICAL - SURGICAL	4825
20201120	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GOWNS	MCKESSON MEDICAL - SURGICAL	3860
20201120	MEDICAL & DENTAL SUPPLIES	COVID 19 MASKS	EMBROIDER IT	1800
20201120	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GLOVES	MCKESSON MEDICAL - SURGICAL	1655.22
20201120	MEDICAL & DENTAL SUPPLIES	CC202263001 COVID19 GOWN	MEDLINE INDUSTRIES INC	247.26
20201120	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GLOVES	MCKESSON MEDICAL - SURGICAL	53.75
20201120	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	FOXWOOD SPRINGS LIVING CENTER	160610.57
20201120	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,BARRIERS,PPE	EXCELSIOR SPRINGS NURSING & RE	58271.43
20201120	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	SRZ OP BALLWIN LLC	49707.49
20201120	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES	LIFE CARE CENTER OF SULLIVAN	41423.98
20201120	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,O2CONCEN,PPE	LEVERING REGIONAL HEALTH CARE	32601.15
20201120	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES	PIN OAKS LIVING CENTER	27787.45
20201120	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	ST JAMES LIVING CENTER	24403.03
20201120	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PAPERPROD,PPE	SRZ OP BALLWIN LLC	15942.27
20201120	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUP, PPE	DELMAR GARDENS OF CHESTERFIELD	14237.91
20201120	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUP, PPE	DELMAR GARDENS OF CREVE COEUR	11243.85
20201120	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES	RIVERVIEW AT THE PARK CARE AND	5203.41
20201120	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/WAGES//WASTEDI	SPRINGFIELD HEALTHCARE	3901.61
20201120	OTHER ASSISTANCE PAYMENTS	COVID19LTC GLOVES,MASK,GOWN	RIVERVIEW AT THE PARK CARE AND	3412.33
20201120	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUP,PPE,	RIVERVIEW AT THE PARK CARE AND	3044.16
20201120	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/FOOD SUPPLIES	RIVERVIEW AT THE PARK CARE AND	2554.06
20201120	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES	RIVERVIEW AT THE PARK CARE AND	2319.94
20201120	OTHER ASSISTANCE PAYMENTS	COVID19LTC02TANK,PPRPRD,PPE	ABC HEALTH CARE	788.31
20201120	OTHER SPECIFIC USE SUPPLIES	COVID19 FACE SHIELDS	PROCUREMENT CARD PAYMENT	220
20201120	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	MIDWEST MEDICAL & APPAREL LLC	230359.66
20201120	PROGRAM REIMBURSEMENTS	COVID19 RAWMAT/SUP/EQUIPPPE	NANOVA BIOMATERIALS INC	159509.09
20201120	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	ANGSTROM MANUFACTURING INC	84236.82
20201120	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	HEARTH AND HOME LLC	55219.29
20201120	PROGRAM REIMBURSEMENTS	COVID19 RETOOL/EQUIP PPE	PLASTIC MOLDING COMPANY	37723.72
20201120	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	IMPROVEYES INC	28931.93
20201120	PROGRAM REIMBURSEMENTS	COVID19 DESIGN/RAW MAT PPE	PLASTIC MOLDING COMPANY	22335
20201120	UNIFORMS & CLOTHING	COVID19 PPE EQUIPMENT FOR S	GLOBAL EQUIPMENT COMPANY INC	13923.42
20201120	UNIFORMS & CLOTHING	COVID: PPE WRHS SAFETY GOGG	FASTENAL COMPANY	5520.9
20201120	UNIFORMS & CLOTHING	COVID: PPE WRS MISC PPE SUP	GLOBAL INDUSTRIAL EQUIPMENT CO	2628.24
20201120	UNIFORMS & CLOTHING	COVID: PPE WRHS SAFETY GOGG	FASTENAL COMPANY	920.15
20201120	UNIFORMS & CLOTHING	COVID: PPE SUPPLIES DISP CO	GLOBAL EQUIPMENT COMPANY INC	157.45
20201120	UNIFORMS & CLOTHING	COVID19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	99.7
20201120	UNIFORMS & CLOTHING	COVID: PPE COVERA	GRAINGER INDUSTRIAL SUPPLY	97
20201123	CUSTODIAL SUPPLIES	COVID PPE GLOVES	MID-SOUTH OFFICE SUPPLY	13.98
20201123	CUSTODIAL SUPPLIES	COVID-19 PPE GLOVES	MID-SOUTH OFFICE SUPPLY	13.98
20201123	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	12.3
20201123	EXPRESS & FREIGHT SERVICES	COVID19-PPE	UNITED PARCEL SERVICE	4661.24
20201123	EXPRESS & FREIGHT SERVICES	COVID19-PPE	UNITED PARCEL SERVICE	2592.86
20201123	EXPRESS & FREIGHT SERVICES	COVID19 PPE HV JV WV BF	FEDEX CORPORATE SERVICES	11.36
20201123	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MEDLINE INDUSTRIES INC	21973.32
20201123	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	MEDLINE INDUSTRIES INC	16179.36
20201123	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 ISOGOWN	MCKESSON MEDICAL - SURGICAL	5790
20201123	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 ISOGOWN	MCKESSON MEDICAL - SURGICAL	5790
20201123	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 ISOGOWN	MCKESSON MEDICAL - SURGICAL	3860
20201123	OFFICE SUPPLIES	MASKS 10/6/2020	MISSOURI VOCATIONAL	4000
20201123	OTHER ASSISTANCE PAYMENTS	COVID19LTC SURCHRG,PPE	CHARITON PARK HEALTH CARE LLC	23417.31
20201123	OTHER ASSISTANCE PAYMENTS	OVID-19 PPE/SUPPLIES	CARRIAGE SQUARE LIVING & REHAB	16664.78
20201123	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PPE	SPRINGFIELD REHABILITATION AND	14677.12
20201123	OTHER ASSISTANCE PAYMENTS	COVID19LTC BARRIERS,PPE	HOUSTON HOUSE	14219.05
20201123	OTHER ASSISTANCE PAYMENTS	COVID19LTC LAPTOPS,PAY,PPE	MAGNOLIA SQUARE NURSING AND RE	12299.36
20201123	OTHER ASSISTANCE PAYMENTS	COVID19LTCMEDWSTE,CLEAN,PPE	RIVERVIEW AT THE PARK CARE AND	9921.83
20201123	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PAPERPROD,PPE	BLUE CASTLE OF THE OZARKS INC	5896.79
20201123	OTHER ASSISTANCE PAYMENTS	COVID19LTC MASKS,GLOVES,SAN	CLARK COUNTY NURSING HOME	3357.84
20201123	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RAW MAT PPE	ERIC SCOTT LEATHERS LLC	213686
20201123	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	NANOVA BIOMATERIALS INC	90499.49
20201123	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	THE COLLECTIVE THREAD	23649.23
20201123	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	DIGITAL DESIGN LLC	20275
20201123	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COST PPE	DIGITAL DESIGN LLC	8895



20201123	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	THE COLLECTIVE THREAD	1196
20201124	CUSTODIAL SUPPLIES	COVID-19 SOAP/GLOVES	DNR STATE PARKS	804.75
20201124	CUSTODIAL SUPPLIES	COVID-19 CLEANER/GLOVES	DNR STATE PARKS	225.24
20201124	CUSTODIAL SUPPLIES	COVID-19 GLOVES/CLN SUPP	DNR STATE PARKS	141.94
20201124	CUSTODIAL SUPPLIES	COVID-19 SANITIZER/GLOVE	DNR STATE PARKS	81.3
20201124	CUSTODIAL SUPPLIES	COVID19 GLOVES, FACE COVE	DNR STATE PARKS	43.28
20201124	CUSTODIAL SUPPLIES	COVID-19 GLOVES	DNR STATE PARKS	24.21
20201124	CUSTODIAL SUPPLIES	COVID-19 LATEX GLOVES	DNR STATE PARKS	16.14
20201125	CUSTODIAL SUPPLIES	COVID19 GLOVES, CLEANER	DNR STATE PARKS	294.76
20201125	CUSTODIAL SUPPLIES	COVID19 CLEANER, GLOVES	DNR STATE PARKS	116.26
20201125	CUSTODIAL SUPPLIES	COVID19 GLOVES	DNR STATE PARKS	80.7
20201125	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	58.9
20201125	CUSTODIAL SUPPLIES	COVID19 CLEANINGSUPP, GLVS	FASTENAL COMPANY	56.39
20201125	CUSTODIAL SUPPLIES	COVID19 GLOVES	DNR STATE PARKS	48.42
20201125	CUSTODIAL SUPPLIES	COVID19 CLEANINGSUP, GLOVE	FASTENAL COMPANY	43.64
20201125	CUSTODIAL SUPPLIES	COVID19 GLOVES	DNR STATE PARKS	40.35
20201125	CUSTODIAL SUPPLIES	COVID19 CLEANINGSUP, GLOVE	FASTENAL COMPANY	25.04
20201125	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	18.96
20201125	CUSTODIAL SUPPLIES	COVID19 CLEANINGSUP, GLOVE	FASTENAL COMPANY	18.8
20201125	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	18.66
20201125	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	9.3
20201125	CUSTODIAL SUPPLIES	COVID19 GLOVES, TOWELS	DNR STATE PARKS	7.88
20201125	CUSTODIAL SUPPLIES	COVID19 GLOVES	FASTENAL COMPANY	6.24
20201125	DISTRIBUTION STATE AGENCIES	COVID19-OVERTIME	MSHP	35332.84
20201125	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UNITED PARCEL SERVICE	13969.41
20201125	EXPRESS & FREIGHT SERVICES	COVID 19 PPE-SHIPPING	UNITED PARCEL SERVICE	12647.1
20201125	MEDICAL & DENTAL EQUIPMENT	COVID19 CC202263001 EQ-MASK	MEDLINE INDUSTRIES INC	1075.57
20201125	MEDICAL & DENTAL EQUIPMENT	COVID19 CC202263001 EQ-MASK	MEDLINE INDUSTRIES INC	1075.57
20201125	MEDICAL & DENTAL EQUIPMENT	COVID19 CC202263001 EQ-MASK	MEDLINE INDUSTRIES INC	1075.57
20201125	MEDICAL & DENTAL EQUIPMENT	COVID19 CC202263001 EQ-MASK	MEDLINE INDUSTRIES INC	1075.57
20201125	MEDICAL & DENTAL EQUIPMENT	COVID19 CC202263001 EQ-MASK	MEDLINE INDUSTRIES INC	1075.57
20201125	MEDICAL & DENTAL EQUIPMENT	COVID19 CC202263001 EQ-MASK	MEDLINE INDUSTRIES INC	1075.57
20201125	MEDICAL & DENTAL EQUIPMENT	COVID19 CC202263001 EQ-MASK	MEDLINE INDUSTRIES INC	1075.57
20201125	MEDICAL & DENTAL EQUIPMENT	COVID19 CC202263001 EQ-MASK	MEDLINE INDUSTRIES INC	1075.57
20201125	MEDICAL & DENTAL EQUIPMENT	COVID19 CC202263001 EQ-MASK	MEDLINE INDUSTRIES INC	1075.57
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	20160
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 C191684001PPE GEAR	MCKESSON MEDICAL - SURGICAL	19520.36
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	FISHER SCIENTIFIC LLC	9285.2
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 SL PPE	MEDLINE INDUSTRIES INC	9266.99
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	7592.41
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 PPE GLOVES	MEDLINE INDUSTRIES INC	6099.78
20201125	MEDICAL & DENTAL SUPPLIES	COVID-19 #CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	2568.88
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 MASKS	MCKESSON MEDICAL - SURGICAL	2568.88
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	MCKESSON MEDICAL - SURGICAL	2568.88
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	MCKESSON MEDICAL - SURGICAL	2568.88
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	1648.32
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 SL PPE	MEDLINE INDUSTRIES INC	1617.12
20201125	MEDICAL & DENTAL SUPPLIES	COVID19CC191684005FACESHLD	MCKESSON MED SURG GOV SOL LLC	1369
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 MASKS	MCKESSON MEDICAL - SURGICAL	1284.44
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 MASKS	MCKESSON MEDICAL - SURGICAL	1284.44
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 MASKS	MCKESSON MEDICAL - SURGICAL	1284.44
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	MCKESSON MEDICAL - SURGICAL	1284.44
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	MCKESSON MEDICAL - SURGICAL	1284.44
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	1251.79
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 PPE GLOVES SL	MEDLINE INDUSTRIES INC	1206.44
20201125	MEDICAL & DENTAL SUPPLIES	COVID-19 #CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	1095.2
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 SL MASK	MCKESSON MEDICAL - SURGICAL	963.33
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	930.98
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVE	MEDLINE INDUSTRIES INC	808.56
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 SL PPE	MEDLINE INDUSTRIES INC	773.53
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 PPE GLOVES	MEDLINE INDUSTRIES INC	694.74
20201125	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES & GOWNS	MEDLINE INDUSTRIES INC	572.82
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 SL PPE	HENRY SCHEIN INC	564.8
20201125	MEDICAL & DENTAL SUPPLIES	COVID-19 CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	415.08
20201125	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MEDLINE INDUSTRIES INC	357.76
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC191884005 GLOVES	MCKESSON MEDICAL - SURGICAL	313.14
20201125	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MEDLINE INDUSTRIES INC	309.06
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	239.8
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	239.8
20201125	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MEDLINE INDUSTRIES INC	230.03
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 PPE GLOVES SL	HENRY SCHEIN INC	212.8
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	212.8
20201125	MEDICAL & DENTAL SUPPLIES	COVID-19 CC191684004 GLOVES	HENRY SCHEIN INC	203.76
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	144
20201125	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	MEDLINE INDUSTRIES INC	141.35
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 #CC191684004 GLOVES	HENRY SCHEIN INC	127.08
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 PPE EYE	MCKESSON MEDICAL - SURGICAL	122.78
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 EYE SHIELD FRAMES	MEDLINE INDUSTRIES INC	108.94
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	103.02
20201125	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	MEDLINE INDUSTRIES INC	103.02
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	90.5
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	89.64
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	49.8
20201125	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GOWNS	MCKESSON MEDICAL - SURGICAL	36.54
20201125	OTHER ADMINISTRATIVE SUPPLIES	COVID19 MASKS	PROCUREMENT CARD PAYMENT	30.99
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/PAY	SIRO OP ROYAL OAK LLC	185372.2
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/CLEANING/PAY	GRANDVIEW HEALTHCARE CARE	153000

20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/CLEAN SUPPLIES	BETHESDA DILWORTH	136536.56
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES	CHRISTIAN EXTENDED CARE &	67293.24
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/PAY	SRZ OP ST LOUIS LLC	63046.94
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/EQUIPMENT	LIBERTY HEALTH & WELLNESS	52359.85
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/PAY	LIFE CARE CENTER OF CARROLLTON	43708.54
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/PAY	LEBANON NORTH NURSING & REHAB	40668.12
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/PAY	LIFE CARE CENTER OF	28264.1
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/CLEAN SUPPLIES	ST JOSEPH SENIOR LIVING	22751.65
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/CLEAN SUPPLIE	MAGNOLIA SQUARE NURSING AND RE	20133.5
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/DELIVER PPE TO	MAGNOLIA SQUARE NURSING AND RE	19011.62
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/PAY	SRZ OP RIVERBEND LLC	18478.13
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/EQUIP	AUTUMN OAKS CARING CENTER	17022.14
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/EQUIP	RIVERVIEW AT THE PARK CARE AND	14551.73
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES	ABBAY WOODS OPERATIONS LLC	12405
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/EQUIP	CAMELOT NURSING REHAB	11582.48
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/TEMP STAFF	SUNSET HEALTH CARE CENTER	11000.06
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/HAZARD PAY	GOOD SAMARITAN CARE CENTER	9831.99
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/EQUIP	ABC HEALTH CARE	9381.35
20201125	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAPERPROD,PPE,	CAMELOT NURSING REHAB	8488.79
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/EQUI	SRZ OP VALLEY VIEW LLC	8124.48
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/WASTE	RIVERVIEW AT THE PARK CARE AND	7133.49
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES	CLARK COUNTY NURSING HOME	6575.74
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/CLEAN SUPPLIE	DUTCHTOWN CARE CENTER	4566.62
20201125	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/EQUI	LAKEVIEW HEALTH CARE & REHABIL	4410.37
20201125	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUP,PPE	FOUNTAINBLEAU NURSING CENTER	2375.4
20201125	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19/GLOVES	SIMMCO DISTRIBUTION LLC	450
20201125	OTHER REPAIR & MAINTENANCE SUPP	COVID19 SAFETY GOGGLES	PROCUREMENT CARD PAYMENT	11.97
20201125	OTHER SPECIFIC USE SUPPLIES	COVID19 GOGGLES	GRAINGER	452.4
20201125	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	GRAINGER	197.6
20201125	OTHER SPECIFIC USE SUPPLIES	COVID19 MASKS, GLOVES	PROCUREMENT CARD PAYMENT	112.24
20201125	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	57
20201125	PROGRAM REIMBURSEMENTS	COVID19 RAWMAT/TEST/CERTPPE	TTG INC	125336.08
20201125	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	SUGARMILL DISTILLING LLC	55000
20201125	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COSTS PPE	LOGIC SYSTEMS SOUND & LIGHTING	23170
20201125	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	HABITATA BUILDING PRODUCTS LLC	13650
20201125	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	THE COLLECTIVE THREAD	6343.17
20201125	UNIFORMS & CLOTHING	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	224.55
20201125	UNIFORMS & CLOTHING	COVID-19 FACE COVERING	PROCUREMENT CARD PAYMENT	84.7
20201125	UNIFORMS & CLOTHING	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	33.31
20201125	UNIFORMS & CLOTHING	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	30
20201125	UNIFORMS & CLOTHING	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	22.1
20201130	CUSTODIAL SUPPLIES	COVID19 BLEACH, GLOVES	DNR STATE PARKS	219.96
20201130	CUSTODIAL SUPPLIES	COVID19 GLOVES, SOAP	DNR STATE PARKS	122.5
20201130	CUSTODIAL SUPPLIES	COVID19 GLOVES	DNR STATE PARKS	95.76
20201130	CUSTODIAL SUPPLIES	COVID19 GLOVES, SANITIZER	DNR STATE PARKS	80.2
20201130	CUSTODIAL SUPPLIES	COVID-19 GLOVES/WIPES/BL	PROCUREMENT CARD PAYMENT	66.4
20201130	CUSTODIAL SUPPLIES	COVID19 GLOVES	DNR STATE PARKS	64.02
20201130	CUSTODIAL SUPPLIES	COVID-19 GLOVES/SQUEEGE	PROCUREMENT CARD PAYMENT	46.15
20201130	CUSTODIAL SUPPLIES	COVID19 GLOVES	DNR STATE PARKS	43.46
20201130	CUSTODIAL SUPPLIES	COVID19 GLOVES	DNR STATE PARKS	24.21
20201130	CUSTODIAL SUPPLIES	COVID19 GLOVES, WIPES	DNR STATE PARKS	18.94
20201130	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	9.78
20201130	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	5.59
20201130	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	2.78
20201130	EXPRESS & FREIGHT SERVICES	COVID19 SHIPPING PPE	UNITED PARCEL SERVICE	68.89
20201130	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	SWATA GROUP LLC	304515
20201130	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	11911.04
20201130	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 GLOVES	MEDLINE INDUSTRIES INC	1095.2
20201130	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	HUBERT COMPANY	528.83
20201130	MEDICAL & DENTAL SUPPLIES	COVID19 C182584001 GLOVES	GRAINGER	262
20201130	MEDICAL & DENTAL SUPPLIES	COVID 19 PPE	MCKESSON MED SURG GOV SOL LLC	248.19
20201130	MEDICAL & DENTAL SUPPLIES	COVID 19 PPE	MCKESSON MED SURG GOV SOL LLC	228.09
20201130	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 FACE COVERING	PROCUREMENT CARD PAYMENT	132.92
20201130	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 N95 FACE MASKS	PROCUREMENT CARD PAYMENT	69.99
20201130	OTHER ADMINISTRATIVE SUPPLIES	COVID19 FACE MASKS	MISSOURI VOCATIONAL	40
20201130	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	14.99
20201130	OTHER ADMINISTRATIVE SUPPLIES	COVID19 MASKS	MISSOURI VOCATIONAL	12.1
20201130	OTHER ADMINISTRATIVE SUPPLIES	COVID19 MASKS	DNR STATE PARKS	8.3
20201130	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	3.89
20201130	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	3.89
20201130	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/PAY	ADAMS STREET- A STONEBRIDGE CO	180000
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANINGSUP,PPE	BETHESDA SOUTHGATE	111251.58
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANINGSUP,PPE	BETHESDA MEADOW	86057.35
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUP,PPE	TWIN PINES ADULT CARE CENTER	75439.29
20201130	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/PAY	WILSONS CREEK NURSING & REHAB	65170.82
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTCPAY,BIOHAZSUP,PPE	THE VILLA AT BLUE RIDGE	62902.75
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC AIRPURIFIER,PPE	LAVERNA SENIOR LIVING	41984.85
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	BEAUVAIS MANOR HEALTHCARE &	41301.84
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTCPAY,PAPERPROD,PPE	TROY MANOR	38152.34
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,BARRIERS,PPE	NEW MADRID LIVING CENTER	33636.84
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC TESTKIT,WIPES,PPE	LEWIS COUNTY NURSING HOME	33415.48
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	WINDSOR HEALTHCARE & REHAB	33295.2
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC HAZARD PAY, PPE	GLENDALE GARDENS NURSING & REH	31239.93
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC TSTSUP,CLEAN,PPE	NIXA NURSING & REHAB	30500.82
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC TEMPSTAFF,PPE,	GARDEN VIEW CARE CENTER	30143.61
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	N&R OF FARMINGTON LLC	29904.16
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTCPAY,PAPERPROD,PPE	HERMITAGE NURSING & REHAB	29788.83
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC OT,PAPERPROD,PPE	SRZ OP ROLLA LLC	28728.27



20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTCPAY,PAPERPROD,PPE	POTOSI MANOR	23569.78
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC CONSULT,PAY,PPE	THE VILLAS	21077.5
20201130	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES	ABBAY WOODS OPERATIONS LLC	20869.72
20201130	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/DISINFECTANT	CLARK COUNTY NURSING HOME	15572.05
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAPERPROD, PPE	DIVERSICARE OF RIVERSIDE LLC	15443.49
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	RIVER CITY LIVING COMMUNITY	13305.48
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CONSULT,PPE	INDIAN HILLS	13200
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	SWEET SPRINGS VILLA	11867.63
20201130	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/TESTS	MOUNT CARMEL COMMUNITIES LLC	11019.19
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC BARRIERSUP, PPE	DELMAR GARDENS OF CHESTERFIELD	10639.8
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC MASK,FACESHIELDS	RANCHO MANOR HEALTHCARE &	10254.43
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC HAZARD PAY, PPE	SMITHVILLE LIVING CENTER	10077.17
20201130	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/SUPPLIES/PAY	ELDON NURSING & REHAB	9893.24
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC PULSEXO,CARTS,PPE	DELMAR GARDENS OF CREVE COEUR	8992.19
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEAN,LABEL,PPE	CALIFORNIA CARE CENTER	8948.07
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC BPCUFF,CLEAN,PPE	AVA PLACE	8569.98
20201130	OTHER ASSISTANCE PAYMENTS	COVID-19 PPE/CLEAN SUPPLIE	REDWOOD OF RAYMORE	7874.98
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEAN,TRSHCAN,PPE	CEDARCREST MANOR	7777.11
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	CARROLL HOUSE	7454.43
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	CURRENT RIVER NURSING CENTER	6557.17
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	GERALD NURSING & REHAB	5891.45
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	GLASGOW GARDENS	5335.08
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC MASKS, GOWNS	GRAND PAVILION AT THE PLAZA	5231.6
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	BLOOMFIELD LIVING CENTER	5136.42
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC MEDWASTE/P,U,PPE	GRAND PAVILION AT THE PLAZA	4738.57
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PAPERPROD,PPE	DEXTER LIVING CENTER	4649.8
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC WIPES,GLVS,GOWNS	DELMAR GARDENS OF OFALLON	3953.86
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PAPERPROD,PPE	DEXTER LIVING CENTER	2858.27
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAPERPROD,PPE,	FOUNTAINBLEAU NURSING CENTER	2736.14
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUP,PPE,	FOUNTAINBLEAU NURSING CENTER	2536.24
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUP,PPE,CANS	FOUNTAINBLEAU NURSING CENTER	2456.46
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC MASKS,WIPES,SANI	FOUNTAINBLEAU NURSING CENTER	818.62
20201130	OTHER ASSISTANCE PAYMENTS	COVID19LTC ISO GOWNS	MAGNOLIA SQUARE NURSING AND RE	242.03
20201130	OTHER LABORATORY & MEDICAL SUPPLIES	COVID19/FACE MASK	OFFICE DEPOT LLC	66630.48
20201130	OTHER LABORATORY & MEDICAL SUPPLIES	COVID19/FACE MASK	OFFICE DEPOT LLC	33315.24
20201130	OTHER SPECIFIC USE SUPPLIES	COVID19 MASK,THERMOM,SANITI	GRAINGER	400.03
20201130	OTHER SPECIFIC USE SUPPLIES	COVID19 MASKS	DNR STATE PARKS	12
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RAW MAT PPE	FIRSTPEAR LLC	177364.66
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	RNN ENTERPRISES LLC	158400
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RAW MAT PPE	KESSLER CONTAINERS LTD	120903
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	BK DISTRIBUTING LLC	110000
20201130	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COSTS PPE	LOGIC SYSTEMS SOUND &	97068.97
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	RNN ENTERPRISES LLC	87745
20201130	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COST PPE	BK DISTRIBUTING LLC	69295.13
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	BK DISTRIBUTING LLC	62000
20201130	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COST PPE	KESSLER CONTAINERS LTD	38560.58
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	PLASTIC MOLDING COMPANY	37114.65
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	THE COLLECTIVE THREAD	37110
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	KESSLER CONTAINERS LTD	25000
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	PLASTIC MOLDING COMPANY	23166
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	MARCO GROUP INCORPORATED	15267.91
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	DIGITAL DESIGN LLC	14250
20201130	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COSTS PPE	THE COLLECTIVE THREAD	13810
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	POLYFAB PLASTICS & SUPPLY INC	12356.5
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIP PPE	BK DISTRIBUTING LLC	11324
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	POLYFAB PLASTICS & SUPPLY INC	11210
20201130	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	LOGIC SYSTEMS SOUND &	11077
20201130	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIAL PPE	FARM AND SPIRIT INC	10535.94
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	DIGITAL DESIGN LLC	9934.73
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	THE COLLECTIVE THREAD	9033.3
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	BK DISTRIBUTING LLC	5500
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RAW MAT PPE	THE COLLECTIVE THREAD	4635.29
20201130	PROGRAM REIMBURSEMENTS	COVID19 DESIGN COSTS PPE	FARM AND SPIRIT INC	4500
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	PLASTIC MOLDING COMPANY	3169
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	FARM AND SPIRIT INC	2295
20201130	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	PLASTIC MOLDING COMPANY	1866.08
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	POLYFAB PLASTICS & SUPPLY INC	1659
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	PLASTIC MOLDING COMPANY	1420
20201130	PROGRAM REIMBURSEMENTS	COVID19CHILDCARE TABLET,PPE	NICEY DAYCARE	903
20201130	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	HABITATA BUILDING PRODUCTS LLC	843.58
20201201	CUSTODIAL SUPPLIES	COVID-19 CLEANSER, GLOVES	DNR STATE PARKS	358.83
20201201	CUSTODIAL SUPPLIES	COVID19 GLOVES, SOAP	DNR STATE PARKS	268.2
20201201	CUSTODIAL SUPPLIES	COVID-19 GLOVES	DNR STATE PARKS	36.42
20201201	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	17.7
20201201	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 SAFETY GLASSES	DNR STATE PARKS	12.56
20201201	OTHER SPECIFIC USE SUPPLIES	COVID-19 MASKS/WIPES	PROCUREMENT CARD PAYMENT	63.95
20201202	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	195.86
20201202	CUSTODIAL SUPPLIES	COVID19 CLEANINGSUP,MASKS	PROCUREMENT CARD PAYMENT	95.86
20201202	CUSTODIAL SUPPLIES	COVID-19 SANITIZER, MASKS	PROCUREMENT CARD PAYMENT	61.26
20201202	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	37.98
20201202	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	37.16
20201202	CUSTODIAL SUPPLIES	COVID-19 LATEX GLOVES	DNR STATE PARKS	29.6
20201202	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	8.85
20201202	EXPRESS & FREIGHT SERVICES	COVID19 SHIPPING PPE	UNITED PARCEL SERVICE	242.14
20201202	OTHER ADMINISTRATIVE SUPPLIES	COVID19 FACE COVERING	PROCUREMENT CARD PAYMENT	110
20201202	OTHER ADMINISTRATIVE SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	74.34
20201202	OTHER ADMINISTRATIVE SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	63.96
20201202	OTHER ADMINISTRATIVE SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	52.86

20201202	OTHER ADMINISTRATIVE SUPPLIES	COVID19 MASKS	PROCUREMENT CARD PAYMENT	41.79
20201202	OTHER ADMINISTRATIVE SUPPLIES	COVID19 SAFETY GOGGLES	PROCUREMENT CARD PAYMENT	38.4
20201202	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	35.88
20201202	OTHER ADMINISTRATIVE SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	29.98
20201202	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	29.9
20201202	OTHER ADMINISTRATIVE SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	9.78
20201202	OTHER SPECIFIC USE SUPPLIES	COVID19 MASKS	PROCUREMENT CARD PAYMENT	42.32
20201202	UNIFORMS & CLOTHING	COVID19-FACEMASKS	PROCUREMENT CARD PAYMENT	167.52
20201202	UNIFORMS & CLOTHING	COVID19 MASKS	PROCUREMENT CARD PAYMENT	87.41
20201202	UNIFORMS & CLOTHING	COVID-19 GLOVES	YARBROUGH INDUSTRIES INC	49.8
20201203	CUSTODIAL SUPPLIES	COVID19 GLOVES	HILLYARD-ST LOUIS	1662.5
20201203	CUSTODIAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	166.97
20201203	CUSTODIAL SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	5.65
20201203	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UPS FREIGHT	5906.57
20201203	EXPRESS & FREIGHT SERVICES	COVID19 SHIP PPE FEDX	FEDERAL EXPRESS CORPORATION	692.94
20201203	EXPRESS & FREIGHT SERVICES	COVID19 SHIP PPE FEDX	FEDERAL EXPRESS CORPORATION	551.59
20201203	EXPRESS & FREIGHT SERVICES	COVID SHIP PPE FEDX	FEDERAL EXPRESS CORPORATION	199.37
20201203	EXPRESS & FREIGHT SERVICES	COVID19 SHIP PPE FEDX	FEDERAL EXPRESS CORPORATION	131.16
20201203	EXPRESS & FREIGHT SERVICES	COVID19 SHIP PPE FEDX	FEDERAL EXPRESS CORPORATION	114.3
20201203	EXPRESS & FREIGHT SERVICES	COVID19 SHIP PPE FEDX	FEDERAL EXPRESS CORPORATION	99.75
20201203	EXPRESS & FREIGHT SERVICES	COVID19 SHIP PPE FEDX	FEDERAL EXPRESS CORPORATION	29.68
20201203	EXPRESS & FREIGHT SERVICES	COVID19 SHIP PPE FEDX	FEDERAL EXPRESS CORPORATION	19.73
20201203	EXPRESS & FREIGHT SERVICES	COVID19 SHIP PPE FEDX	FEDERAL EXPRESS CORPORATION	14.5
20201203	LAW ENFORCEMENT SUPPLIES	COVID19 GOGGLES	REVISION MILITARY LTD	45596
20201203	LAW ENFORCEMENT SUPPLIES	COVID19 PROTECTIVE MASKS	SOUTHERN UNIFORM & EQUIPMENT	4244.67
20201203	LAW ENFORCEMENT SUPPLIES	COVID19 GOGGLES FR	REVISION MILITARY LTD	153.74
20201203	LAW ENFORCEMENT SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	48.9
20201203	LAW ENFORCEMENT SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	28.5
20201203	LAW ENFORCEMENT SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	20.95
20201203	LAW ENFORCEMENT SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	20.95
20201203	LAW ENFORCEMENT SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	20.95
20201203	LAW ENFORCEMENT SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	19.56
20201203	LAW ENFORCEMENT SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	19.56
20201203	LAW ENFORCEMENT SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	12.57
20201203	LAW ENFORCEMENT SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	12.57
20201203	LAW ENFORCEMENT SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	12.57
20201203	LAW ENFORCEMENT SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	9.78
20201203	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	HANESBRANDS INC	512957.6
20201203	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	HANESBRANDS INC	455000
20201203	MEDICAL & DENTAL SUPPLIES	COVID19-PPE	HANESBRANDS INC	436800
20201203	MEDICAL & DENTAL SUPPLIES	COVID 19 MASKS	CONCORDANCE HEALTHCARE	299520
20201203	MEDICAL & DENTAL SUPPLIES	COVID 19GOGGLES	BK DISTRIBUTING LLC	222480
20201203	MEDICAL & DENTAL SUPPLIES	COVID 19 MASKS	GREEN RESOURCES CONSULTING	14950
20201203	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	12600
20201203	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE GLOVES	MCKESSON MEDICAL-SURGICAL	3375.4
20201203	MEDICAL & DENTAL SUPPLIES	COVID19 SCVRS MASK SHLD	MCKESSON MEDICAL-SURGICAL INC	2309.38
20201203	MEDICAL & DENTAL SUPPLIES	COVID19 PROTECTIVE MASKS	SOUTHERN UNIFORM & EQUIPMENT	1422
20201203	MEDICAL & DENTAL SUPPLIES	COVID19 CC202263001 PPE	MEDLINE INDUSTRIES INC	1204.72
20201203	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	977.94
20201203	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	OFFICE DEPOT INC	524
20201203	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	OFFICE DEPOT INC	422.5
20201203	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684004 GLOVES	HENRY SCHEIN INC	410
20201203	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	227.4
20201203	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	OFFICE DEPOT INC	170.4
20201203	MEDICAL & DENTAL SUPPLIES	COVID19 C191684005 N95 MASK	MCKESSON MEDICAL - SURGICAL	88.2
20201203	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	PROCUREMENT CARD PAYMENT	59.64
20201203	MEDICAL & DENTAL SUPPLIES	COVID19 FACE SHIELDS	PROCUREMENT CARD PAYMENT	25.99
20201203	MEDICAL & DENTAL SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	20.99
20201203	MEDICAL & DENTAL SUPPLIES	COVID-19 N95 RESPIR MASK	PROCUREMENT CARD PAYMENT	4.29
20201203	OFFICE SUPPLIES	COVID 19 MED GLOVES	STAPLES BUSINESS ADVANTAGE	12.57
20201203	OFFICE SUPPLIES	COVID 19 MED GLOVES	STAPLES BUSINESS ADVANTAGE	8.38
20201203	OTHER ASSISTANCE PAYMENTS	COVID19LTCPAY,PAPERPROD,PPE	PACIFIC CARE CENTER	105440.96
20201203	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	SHEPHERD OF THE HILLS LIVING C	97364.44
20201203	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE; SUPPLIES	MAGNOLIA SQUARE NURSING AND RE	68315.7
20201203	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,COUNSEL,PPE	BEAUVAIS MANOR HEALTHCARE &	52120.44
20201203	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEAN SUPP, PPE	JEFFERSON CITY MANOR CARE CENT	37404.44
20201203	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	BELLEFONTAINE GARDENS NURSING	30128.51
20201203	OTHER ASSISTANCE PAYMENTS	COVID19 HZD PAY,PPE,SUPPLIE	CUBA MANOR INC	27775.49
20201203	OTHER ASSISTANCE PAYMENTS	COVID19LTCPAY,PAPERPROD,PPE	LINCOLN COUNTY NURSING & REHAB	27655.34
20201203	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,WASTECAN,PPE	PIN OAKS LIVING CENTER	26992.02
20201203	OTHER ASSISTANCE PAYMENTS	COVID19 HZD PAY, PPE, CLEAN	LIFE CARE CENTER OF SULLIVAN	25113.48
20201203	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CONSULT,PPE	LHW OP LLC	19920.03
20201203	OTHER ASSISTANCE PAYMENTS	COVID19LTCPAY,PAPERPROD,PPE	NHC HEALTHCARE DESLOE	14805.56
20201203	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	MOBERLY NURSING & REHAB	14318.59
20201203	OTHER ASSISTANCE PAYMENTS	COVID19LTCPAY,PAPERPROD,PPE	WESTWOOD LIVING CENTER	13454.73
20201203	OTHER ASSISTANCE PAYMENTS	COVID19 PPE, SUPPLIES	SRZ OP VALLEY VIEW LLC	12315.14
20201203	OTHER ASSISTANCE PAYMENTS	COVID19 DISINF MASK STAF	SRZ OP BENTONVIEW LLC	10098.76
20201203	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	GLASGOW GARDENS	9249.55
20201203	OTHER ASSISTANCE PAYMENTS	COVID19 MASK DISINF HPAY	MONTEAU CARE CENTER	7209.57
20201203	OTHER ASSISTANCE PAYMENTS	COVID19 HZD PAY, PPE, SUPPL	GLENWOOD HEALTHCARE	6578.1
20201203	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUP,THERMOM	DUTCHTOWN CARE CENTER	6411.51
20201203	OTHER ASSISTANCE PAYMENTS	COVID19LTC THERMOMETER,PPE	FOUNTAINBLEAU NURSING CENTER	3729.6
20201203	OTHER ASSISTANCE PAYMENTS	COVID19 GLVS WIPS UTENS MAS	HOPE CARE CENTER	1553.76
20201203	OTHER SPECIFIC USE SUPPLIES	COVID19 SUPPLYDELIVER PPE	PROCUREMENT CARD PAYMENT	376.44
20201203	OTHER SPECIFIC USE SUPPLIES	COVID19 SHIELDS	PROCUREMENT CARD PAYMENT	178.15
20201203	OTHER SPECIFIC USE SUPPLIES	COVID-19 PPE MASKS 1102	STAPLES ADVANTAGE	81.8
20201203	OTHER SPECIFIC USE SUPPLIES	COVID19 STRAPSDDELIVER PPE	PROCUREMENT CARD PAYMENT	59.96
20201203	OTHER SPECIFIC USE SUPPLIES	COVID19 MASKS	PROCUREMENT CARD PAYMENT	59.36

20201203	OTHER SPECIFIC USE SUPPLIES	COVID-19 PPE/CLEAN SUPPLIE	STAPLES ADVANTAGE	39.6
20201203	OTHER SPECIFIC USE SUPPLIES	COVID-19 PPE MASKS 1102	STAPLES ADVANTAGE	38.14
20201203	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASKS 1102	STAPLES ADVANTAGE	32.72
20201203	OTHER SPECIFIC USE SUPPLIES	COVID19 STRAP DELIVER PPE	PROCUREMENT CARD PAYMENT	29.98
20201203	OTHER SPECIFIC USE SUPPLIES	COVID19 WRAP DELIVER PPE	PROCUREMENT CARD PAYMENT	27.83
20201203	PROGRAM REIMBURSEMENTS	COVID-19 CAF PPE-08FY21-018	PATRIOT MEDICAL DEVICES LLC	449999
20201203	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	RNN ENTERPRISES LLC	265940.75
20201203	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	JUSTICE FURNITURE MFG CO INC	193050.49
20201203	PROGRAM REIMBURSEMENTS	COVID-19 PPE-08FY21-027	POLYFAB PLASTICS & SUPPLY INC	140165
20201203	PROGRAM REIMBURSEMENTS	COVID19 RAW MAT/EQUIP PPE	FOAM PRODUCTS CORPORATION	132066.5
20201203	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	JUSTICE FURNITURE MFG CO INC	55231.6
20201203	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	MK MACHINING LLC	52996.85
20201203	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	DIGITAL DESIGN LLC	44800
20201203	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	FIRSTSPEAR LLC	42680
20201203	PROGRAM REIMBURSEMENTS	COVID-19 CAF PPE-08FY21-028	HABITATA BUILDING PRODUCTS LLC	41657.6
20201203	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIAL PPE	JUSTICE FURNITURE MFG CO INC	40388.3
20201203	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	POLYFAB PLASTICS & SUPPLY INC	37772.7
20201203	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	POLYFAB PLASTICS & SUPPLY INC	37499.17
20201203	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COSTS PPE	MK MACHINING LLC	31100
20201203	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RAW MAT PPE	KESSLER CONTAINERS LTD	30753.25
20201203	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	RNN ENTERPRISES LLC	29562.5
20201203	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	POLYFAB PLASTICS & SUPPLY INC	27442.51
20201203	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	JUSTICE FURNITURE MFG CO INC	25916.32
20201203	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	FARM AND SPIRIT INC	24895
20201203	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	POLYFAB PLASTICS & SUPPLY INC	20223.78
20201203	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	POLYFAB PLASTICS & SUPPLY INC	17060.99
20201203	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	POLYFAB PLASTICS & SUPPLY INC	16590.16
20201203	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	POLYFAB PLASTICS & SUPPLY INC	16148.5
20201203	PROGRAM REIMBURSEMENTS	COVID19 EQUIP.RAWMAT PPE	PLASTIC MOLDING COMPANY	15137.33
20201203	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	JUSTICE FURNITURE MFG CO INC	14842.22
20201203	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIAL PPE	POLYFAB PLASTICS & SUPPLY INC	12564.78
20201203	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	RNN ENTERPRISES LLC	10095
20201203	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIAL PPE	POLYFAB PLASTICS & SUPPLY INC	7811
20201203	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIAL PPE	POLYFAB PLASTICS & SUPPLY INC	7611.32
20201203	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	MIDWEST MEDICAL & APPAREL LLC	7399.98
20201203	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	POLYFAB PLASTICS & SUPPLY INC	6718
20201203	PROGRAM REIMBURSEMENTS	COVID-19 CAF PPE-08FY21-027	POLYFAB PLASTICS & SUPPLY INC	6575.67
20201203	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	THE COLLECTIVE THREAD	6484.45
20201203	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	FARM AND SPIRIT INC	5627
20201203	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIAL PPE	POLYFAB PLASTICS & SUPPLY INC	5323.7
20201203	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	POLYFAB PLASTICS & SUPPLY INC	4680
20201203	PROGRAM REIMBURSEMENTS	COVID19 CHILDCARE CLEAN,PPE	JEWISH COMMUNITY CENTERS	4517
20201203	PROGRAM REIMBURSEMENTS	COVID19CHILDCARE MASK,GLVS,	KIDDIE ACADEMY OF CHESTERFIELD	4517
20201203	PROGRAM REIMBURSEMENTS	COVID19 TECH UPGRADES PPE	POLYFAB PLASTICS & SUPPLY INC	3875
20201203	PROGRAM REIMBURSEMENTS	COVID-19 CAF PPE-09FY21-051	THE COLLECTIVE THREAD	3371.25
20201203	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	POLYFAB PLASTICS & SUPPLY INC	2881.2
20201203	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	JUSTICE FURNITURE MFG CO INC	2720.89
20201203	PROGRAM REIMBURSEMENTS	COVID19CHILDCARECLEANSUPPPE	CLAY, GINGER	2710
20201203	PROGRAM REIMBURSEMENTS	COVID19CHILDCARELEGALAD,PPE	CREATIVE NURSERY AND PRESCHOOL	2710
20201203	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	FARM AND SPIRIT INC	2587.5
20201203	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIAL PPE	POLYFAB PLASTICS & SUPPLY INC	2250
20201203	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	FARM AND SPIRIT INC	2220
20201203	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	POLYFAB PLASTICS & SUPPLY INC	2162
20201203	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	PLASTIC MOLDING COMPANY	1418.58
20201203	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	LOGIC SYSTEMS SOUND &	1150
20201203	PROGRAM REIMBURSEMENTS	COVID-19 GLOVES/MASKS	LOT A LUV CORPORATION	1101.65
20201203	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	DIGITAL DESIGN LLC	819
20201203	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	POLYFAB PLASTICS & SUPPLY INC	770.15
20201203	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	LOGIC SYSTEMS SOUND &	515
20201203	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	POLYFAB PLASTICS & SUPPLY INC	418
20201203	PROGRAM REIMBURSEMENTS	COVID19CHILDCARE MASK,CLEAN	PEGELOW, ANGELA	384.41
20201203	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	DIGITAL DESIGN LLC	160.55
20201203	UNIFORMS & CLOTHING	COVID19 GLOVES	GRAINGER INC	593.3
20201203	UNIFORMS & CLOTHING	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	167.88
20201203	UNIFORMS & CLOTHING	COVID19 GLOVES	GRAINGER INC	160.54
20201203	UNIFORMS & CLOTHING	COVID19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	102.9
20201203	UNIFORMS & CLOTHING	COVID19 GLOVES	GRAINGER INC	62.82
20201203	UNIFORMS & CLOTHING	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	59.88
20201203	UNIFORMS & CLOTHING	COVID19 MASKS, SANITIZER	PROCUREMENT CARD PAYMENT	8
20201203	VEHICLE RENTALS	COVID19 UHAUL RENTAL PPE	PROCUREMENT CARD PAYMENT	198.32
20201204	AID EDUC INSTT & SCHOOL DIST	COVID19CRF#1 U OF HEA SCI	ST LOUIS COLLEGE OF PHARMACY	90464.5
20201204	COVID TESTING SERVICES	COVID-19 MASK FIT TESTING	OCCUPATIONAL MEDICINE OF MID	3567
20201204	CUSTODIAL SUPPLIES	COVID-19 GLOVES MASKS	PROCUREMENT CARD PAYMENT	418.1
20201204	CUSTODIAL SUPPLIES	COVID19 MASKS, SANITIZER,	PROCUREMENT CARD PAYMENT	81.92
20201204	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	57.28
20201204	CUSTODIAL SUPPLIES	COVID19 GLOVES	DNR STATE PARKS	48.42
20201204	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	45.58
20201204	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	38.97
20201204	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	37.98
20201204	CUSTODIAL SUPPLIES	COVID-19 WIPES, MASKS	PROCUREMENT CARD PAYMENT	37.29
20201204	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	29.94
20201204	CUSTODIAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	17.98
20201204	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UNITED PARCEL SERVICE	23275.18
20201204	EXPRESS & FREIGHT SERVICES	COVID19 SHIPPING PPE	FEDERAL EXPRESS CORPORATION	15.48
20201204	EXPRESS & FREIGHT SERVICES	COVID19 SHIPPING PPE	FEDERAL EXPRESS CORPORATION	8.65
20201204	EXPRESS & FREIGHT SERVICES	COVID19 SHIPPING PPE	FEDERAL EXPRESS CORPORATION	8.65
20201204	EXPRESS & FREIGHT SERVICES	COVID19 SHIPPING PPE	FEDERAL EXPRESS CORPORATION	8.65
20201204	EXPRESS & FREIGHT SERVICES	COVID19 SHIPPING PPE	FEDERAL EXPRESS CORPORATION	5.76



20201204	EXPRESS & FREIGHT SERVICES	COVID19 SHIPPING PPE	FEDERAL EXPRESS CORPORATION	5.76
20201204	LAW ENFORCEMENT SUPPLIES	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	9.78
20201204	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE,CLEAN,CART	MANOR GROVE INCORPORATED	14485.3
20201204	OTHER ASSISTANCE PAYMENTS	COVID19 LTC HAZPAY,PPE,SAN	GAMMA ROAD LODGE	11777.57
20201204	OTHER ASSISTANCE PAYMENTS	COVID19 HAZPAY,PPE,SUPPLY	CAMDENTON WINDSOR ESTATES	10283.28
20201204	OTHER ASSISTANCE PAYMENTS	COVID19 GLVS MASK GOWN	BAPTIST HOME	9576.23
20201204	OTHER ASSISTANCE PAYMENTS	COVID19 LTC HAZPAY,PPE	GOOD SAMARITAN CARE CENTER	4615.35
20201204	OTHER ASSISTANCE PAYMENTS	COVID-19 LTC HAZPAY,PPE,SPR	GLENWOOD HEALTHCARE	4038.34
20201204	OTHER ASSISTANCE PAYMENTS	COVID19 LTC MASKS,WIPES,SUP	HEISINGER LUTHERAN HOME	3547.42
20201204	OTHER ASSISTANCE PAYMENTS	COVID19 LTC MASK,GLOVE,SUPP	LUTHER MANOR RETIREMENT & NURS	1233.71
20201204	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE, GOWN	FOUNTAINBLEAU NURSING CENTER	469.13
20201204	OTHER REPAIR & MAINTENANCE SUPP	COVID19 STRAP DELIVER PPE	PROCUREMENT CARD PAYMENT	86.99
20201204	OTHER REPAIR & MAINTENANCE SUPP	COVID19 GLOVES, CLEANSUPP	PROCUREMENT CARD PAYMENT	55.59
20201204	OTHER SPECIFIC USE SUPPLIES	COVID19 TARPS DELIVER PPE	PROCUREMENT CARD PAYMENT	129.98
20201204	OTHER SPECIFIC USE SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	85.25
20201204	OTHER SPECIFIC USE SUPPLIES	COVID-19 PPE SUPPLIES	PROCUREMENT CARD PAYMENT	24.98
20201204	OTHER SPECIFIC USE SUPPLIES	COVID19 PPE STORAGE SUPPL	PROCUREMENT CARD PAYMENT	19.96
20201204	UNIFORMS & CLOTHING	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	937.5
20201204	UNIFORMS & CLOTHING	COVID-19 FCE COVRNGS, KIT	PROCUREMENT CARD PAYMENT	273.1
20201204	UNIFORMS & CLOTHING	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	169.5
20201204	UNIFORMS & CLOTHING	COVID-19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	159.9
20201204	UNIFORMS & CLOTHING	COVID19 DUFFLE BAGS-PPE	PROCUREMENT CARD PAYMENT	130
20201204	UNIFORMS & CLOTHING	COVID19 MASKS	MISSOURI VOCATIONAL	120
20201204	UNIFORMS & CLOTHING	COVID-19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	102.9
20201204	UNIFORMS & CLOTHING	COVID19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	89.73
20201204	UNIFORMS & CLOTHING	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	75.98
20201204	UNIFORMS & CLOTHING	COVID-19 PPE	PROCUREMENT CARD PAYMENT	70
20201204	UNIFORMS & CLOTHING	COVID19 DUFFLE BAGS-PPE	PROCUREMENT CARD PAYMENT	50
20201204	UNIFORMS & CLOTHING	COVID19 MASKS, GLOVES	PROCUREMENT CARD PAYMENT	44.85
20201204	UNIFORMS & CLOTHING	COVID19 GLOVES	PROCUREMENT CARD PAYMENT	31.98
20201207	AID EDUC INSTITUTE & SCHOOL DIST	COVID19PAY,EQUITHREERIVERS#8	THREE RIVERS COLLEGE	4112.23
20201207	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UPS FREIGHT	5825.08
20201207	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	4172.2
20201207	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	3525.14
20201207	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UPS FREIGHT	3178.73
20201207	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	3066.03
20201207	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	2456.56
20201207	EXPRESS & FREIGHT SERVICES	COVID19 SHIPPING PPE	UNITED PARCEL SERVICE	46.7
20201207	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	-179.96
20201207	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	FASTENAL COMPANY	349920
20201207	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	CONCORDANCE HEALTHCARE	299520
20201207	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	CONCORDANCE HEALTHCARE	299520
20201207	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	CONCORDANCE HEALTHCARE	278640
20201207	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	CONCORDANCE HEALTHCARE	245700
20201207	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	FASTENAL COMPANY	180225
20201207	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	ANGSTROM MANUFACTURING INC	25040
20201207	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	MISSOURI VOCATIONAL	1600
20201207	MEDICAL & DENTAL SUPPLIES	COVID19-GOGGLES	EMS PROFESSIONALS INC	1391.58
20201207	MEDICAL & DENTAL SUPPLIES	COVID19 GOGGLE	FISHER SCIENTIFIC LLC	662.76
20201207	MEDICAL & DENTAL SUPPLIES	COVID19-NITRILE GLOVES	MEDLINE INDUSTRIES INC	596.65
20201207	MEDICAL & DENTAL SUPPLIES	COVID19 GLOVES	MCKESSON MED SURG GOV SOL LLC	470
20201207	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	384.93
20201207	MEDICAL & DENTAL SUPPLIES	COVID19 GOGGLE	FISHER SCIENTIFIC LLC	378.72
20201207	MEDICAL & DENTAL SUPPLIES	COVID19-NITRILE GLOVES	MEDLINE INDUSTRIES INC	357.99
20201207	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	54.99
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE	JOHN KNOX VILLAGE CARE CENTER	153923.17
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	ELDERCARE OF MID-MISSOURI XIII	125662.9
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIESTESTKIT	CRYSTAL OAKS	96243.02
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	BEAUVAIS MANOR ON THE PARK	68029.19
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE KITS SUPPLIES	MACON HEALTH CARE CENTER	62545.16
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	OPCO FARMINGTON MO LLC	60360.59
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE LTC PAY	VILLAGES OF JACKSON CREEK LLC	46408.99
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	BRIDGEWOOD HEALTH CARE CENTER	44086.51
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE/SANITIZER	SALT RIVER COMMUNITY CARE	38005.53
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE/SUPPLIES/SANITI	REPUBLIC NURSING AND REHAB	37560.21
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	REPUBLIC NURSING AND REHAB	35478.92
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE/SANI	N&R OF PLATTE CITY INC	34934.72
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 HAZAD PAY/PPE SUPPL	POTOSI MANOR	30002.09
20201207	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	COUNTRY MEADOWS	29013.01
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE	COUNTRY MEADOWS	26916.26
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	BRENT B TINNIN MANOR	25831.88
20201207	OTHER ASSISTANCE PAYMENTS	COVID19PPESUPPLIESLTCPAY	FORSYTH CARE CENTER	25360.77
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE/SANITIZE ITEMS	MARK TWAIN CARING CENTER	25228.39
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE FACE MASKS/SANI	DELMAR GARDENS SOUTH	24679.56
20201207	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAPERPROD,PPE,	N & R OF FREDERICKTOWN	23549.57
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	DUTCHTOWN CARE CENTER	23468.56
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	CRAB APPLE VILLAGE SENIOR ESTA	21450
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	COUNTRY MEADOWS	21388.61
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	N&R OF FARMINGTON LLC	20897.6
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	ARROWHEAD RETIREMENT	20243.84
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE EQUI	GOLDEN AGE LIVING CENTER	19969.5
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	STRAFFORD CARE CENTER	19709.89
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	LIFE CARE CENTER OF	19642.78
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES/SANI	DELMAR GARDENS NORTH OPERATING	18905
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY/PPE SUPPLY	CARRIAGE SQUARE LIVING & REHAB	18882.15
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	LEBANON SOUTH NURSING & REHAB	18516.1
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	LINDEN WOODS VILLAGE	17365.85
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	COMMUNITY MANOR	16043.56

20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	EL DORADO SPRINGS RESIDENTIAL	16023.43
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	MOBERLY NURSING & REHAB	14872.25
20201207	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	ASHLAND HEALTHCARE	12959.27
20201207	OTHER ASSISTANCE PAYMENTS	COVID 19 PPE SUPPLIES	MASON POINTE CARE CENTER	12612.15
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	ST JOE MANOR	12349.32
20201207	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,BARRIERS,PPE	CARROLL HOUSE	11831.19
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	BREEZE PARK	9383.5
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE/SANITIZING	DELMAR GARDENS NORTH OPERATING	8673.9
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPESUPPLIESPAY	CAMDENTON WINDSOR ESTATES	8239.05
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 LTD PAY/PPE/SANITIZ	DIVERSICARE OF CHATEAU LLC	8004.83
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	GRANBY HOUSE	7993.54
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE/SANITIZER	WESTWOOD LIVING CENTER	7895.74
20201207	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	CLEARVIEW NURSING CENTER	7879.97
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE-SUPPLIES	BROOKHAVEN NURSING & REHAB	7843.72
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	MARK TWAIN CARING CENTER	7556.43
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES/LTC PA	CURRENT RIVER NURSING CENTER	7311.5
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	ST JOE MANOR	6677.83
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE/SANITIZING	MINER NURSING CENTER	6555.08
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPEPAYSUPPLIES	CALIFORNIA CARE CENTER	6527.64
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE	SRZ OP RIVERBEND LLC	5983.52
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE/SANITIZER	LUTHER MANOR RETIREMENT & NURS	5890.35
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE/SANITIZING	EAST PRAIRIE NURSING CENTER	4811.12
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	CHATEAU ANN MARIE	4807.37
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE/SANITIZE/EQUIP	DELMAR GARDENS WEST OPERATING	4402.52
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	BRISTOL CARE, INC	3960
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	BRISTOL CARE, INC	3846.87
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SANITIZER	COLUMBIA MANOR CARE CENTER	3325.54
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	BRISTOL CARE, INC	3293.76
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	CURRENT RIVER NURSING CENTER	3007.93
20201207	OTHER ASSISTANCE PAYMENTS	COVID19LTC UHAULRENT,PPE	BIRCH POINTE HEALTH AND REHAB	2776.25
20201207	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,BLEACH,PPE	BLOOMFIELD LIVING CENTER	2705.73
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	CALIFORNIA CARE CENTER	2670.61
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	BRISTOL CARE, INC	2591.14
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	COPPER ROCK HEALTHCARE	2460.29
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SANITIZING SUPP	RICHLAND CARE CENTER INC	2457.15
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	BRISTOL CARE, INC	2188.43
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	BRISTOL CARE, INC	1787.24
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	ST JOSEPHS BLUFFS	1385.11
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	BRISTOL CARE, INC	1358.02
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	BRISTOL CARE, INC	1331.23
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE/SANITIZER	TRI-COUNTY CARE CENTER	1307.08
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE	BRISTOL CARE, INC	1268.28
20201207	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	BLOOMFIELD LIVING CENTER	1262.24
20201207	OTHER ASSISTANCE PAYMENTS	COVID19LTC PPEFACEMASKS,	LEWIS COUNTY NURSING HOME	1059.26
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	ST JOE MANOR	972.28
20201207	OTHER ASSISTANCE PAYMENTS	COVID19LTCPUULSEOX,CLEAN,PPE	BLUE CASTLE OF THE OZARKS INC	692.5
20201207	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	CHATEAU ANN MARIE	571.46
20201207	OTHER SPECIFIC USE SUPPLIES	COVID19 PPE FACE MASK	MISSOURI VOCATIONAL	1400
20201207	OTHER SPECIFIC USE SUPPLIES	COVID19 FACE MASKS	PROCUREMENT CARD PAYMENT	134.5
20201207	OTHER SPECIFIC USE SUPPLIES	COVID19 TOWELS, GLOVES	PROCUREMENT CARD PAYMENT	19.57
20201207	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RAW MAT PPE	BK DISTRIBUTING LLC	250000
20201207	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	ERIC SCOTT LEATHERS LLC	197566.2
20201207	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RWMAT/RETL PPE	CHAMPION BRANDS LLC	158178.79
20201207	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	EXECUTIVE DATA CONTROL	141335
20201207	PROGRAM REIMBURSEMENTS	COVID19 RTL/RAWMAT/EQUIPPPE	BINKY GUY TEXTILES	112724.69
20201207	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COSTS PPE	FARM AND SPIRIT INC	88190.5
20201207	PROGRAM REIMBURSEMENTS	COVID19 RTL/TCH/RAW/CON PPE	CENTRAL MISSOURI	77251
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	ROI INTERNATIONAL LLC	53668.37
20201207	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	BK DISTRIBUTING LLC	43880.87
20201207	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RAW MAT PPE	JLP VENTURES LLC	37480.83
20201207	PROGRAM REIMBURSEMENTS	COVID19 RETOOL/EQUIP PPE	IMPROVEYES INC	34477.6
20201207	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	LOGIC SYSTEMS SOUND &	32945
20201207	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RETOOLCOSTPPE	EXECUTIVE DATA CONTROL	23634.15
20201207	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	MIDWEST MEDICAL & APPAREL LLC	23480
20201207	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COSTS PPE	FARM AND SPIRIT INC	17174.3
20201207	PROGRAM REIMBURSEMENTS	COVID19 RTL/RAWMAT/EQUIPPPE	GATEWAY INDUSTRIES OF ELDON	16723
20201207	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COSTS PPE	FARM AND SPIRIT INC	13408.13
20201207	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	LOGIC SYSTEMS SOUND &	13238.07
20201207	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	LOGIC SYSTEMS SOUND &	12408.97
20201207	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	EXECUTIVE DATA CONTROL	9300
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	8326.8
20201207	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	ERIC SCOTT LEATHERS LLC	7402.34
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	6793.65
20201207	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	EXECUTIVE DATA CONTROL	6630
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	5828.6
20201207	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	POLYFAB PLASTICS & SUPPLY INC	5662.8
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	5543.12
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	5344.35
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	4679.36
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	4605.76
20201207	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COSTS PPE	FARM AND SPIRIT INC	4530.84
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	4483.89
20201207	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	POLYFAB PLASTICS & SUPPLY INC	3800
20201207	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	LOGIC SYSTEMS SOUND &	3574.84
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	3547.38
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	3190
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	3121
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	2864.66



20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	2145.2
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	1749
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	1718.92
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	1643.12
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	1584.6
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	1434.09
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	1413.76
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	1284.32
20201207	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	1187.04
20201207	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	POLYFAB PLASTICS & SUPPLY INC	609.35
20201207	UNIFORMS & CLOTHING	GLOVES - COVID19	VERITIV OPERATING COMPANY	1379
20201207	UNIFORMS & CLOTHING	COVID19 FACE COVER	MISSOURI VOCATIONAL	600
20201207	UNIFORMS & CLOTHING	COVID-19 FACE MASK	MISSOURI STATE TROOPERS	90
20201207	UNIFORMS & CLOTHING	COVID19 SAFETYGLASSES PPE	FASTENAL COMPANY	25.65
20201208	OFFICE SUPPLIES	COVID-19 FACE MASKS	PROCUREMENT CARD PAYMENT	299.8
20201208	OTHER ASSISTANCE PAYMENTS	COVID19 HAZ PAY/PPE SUP/EQU	SRZ OP ASHTON LLC	131882.1
20201208	OTHER ASSISTANCE PAYMENTS	COVID19 PPE/HAZARD PAY	BELLEFONTAINE GARDENS NURSING	98481.53
20201208	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES PAY	SIRO OP BIG RIVER LLC	51680.35
20201208	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	PARKLANE CARE AND REHABILITATI	35153.4
20201208	OTHER ASSISTANCE PAYMENTS	COVID19 HAZ PAY/PPE SUPPLIE	SUNSET HOME	1657.27
20201209	AID EDUC INSTIT & SCHOOL DIST	COVID19PPE, SWBAPTISTUNIV#2	SOUTHWEST BAPTIST UNIVERSITY	27680.23
20201209	MEDICAL & DENTAL SUPPLIES	COVID19 GOGGLES	SWATA GROUP LLC	795225.6
20201209	MEDICAL & DENTAL SUPPLIES	COVID19 GOGGLES	BK DISTRIBUTING LLC	667440
20201209	MEDICAL & DENTAL SUPPLIES	COVID19 GOGGLES	BK DISTRIBUTING LLC	444960
20201209	MEDICAL & DENTAL SUPPLIES	COVID19 GOGGLES	BK DISTRIBUTING LLC	430128
20201209	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	HABITATA BUILDING PRODUCTS LLC	345117
20201209	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	CONCORDANCE HEALTHCARE	299520
20201209	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	CONCORDANCE HEALTHCARE	299520
20201209	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	CONCORDANCE HEALTHCARE	299520
20201209	MEDICAL & DENTAL SUPPLIES	COVID19 RESPIRATO	HABITATA BUILDING PRODUCTS LLC	96855
20201209	MEDICAL & DENTAL SUPPLIES	COVID19 FACE MASK	CAPITAL ONE CARD SERVICE	1530.78
20201209	MEDICAL & DENTAL SUPPLIES	COVID19 GOWNS	MISSOURI VOCATIONAL	1093.5
20201209	MEDICAL & DENTAL SUPPLIES	COVID19-FACE MASKS	PROCUREMENT CARD PAYMENT	225
20201209	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	224.85
20201209	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	69.94
20201209	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 MASKS, GOGGLES	PROCUREMENT CARD PAYMENT	45.68
20201209	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 GLOVES, PPE	PROCUREMENT CARD PAYMENT	35.96
20201209	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 DISPOSABLE MASKS	PROCUREMENT CARD PAYMENT	17.94
20201209	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANING,PPE	PARC PROVENCE	210000
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE	NORMANDY NURSING CENTER	142798.21
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	POINT LOOKOUT NURSING & REHAB	133106.4
20201209	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	COPPER ROCK HEALTHCARE	109024.02
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	HILLCREST CARE CENTER	100202.9
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPP/HAZARD PAY	NEW MARK CARE CENTER	94606.12
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	JOHN KNOX VILLAGE CARE CENTER	91219.47
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	LEBANON SOUTH NURSING & REHAB	73569.77
20201209	OTHER ASSISTANCE PAYMENTS	COVID19LTC MASK,GLVS,WIPES,	GRAND MANOR NURSING &	59520.88
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	NIXA NURSING & REHAB	48918.2
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY, PPE	NHC HEALTHCARE	45590.7
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	LUTHERAN CONVALESCENT HOME	35612.86
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTC CLEANSUP, PPE	ASHLEY MANOR CARE CENTER	35281.36
20201209	OTHER ASSISTANCE PAYMENTS	COVID19LTCPAY,VSMONITOR,PPE	GREENVILLE HEALTH CARE CENTER	33483.21
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY, PPE	NHC HEALTHCARE KENNETT	32133.95
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	GREENVILLE HEALTH CARE CENTER	22148.02
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	CHARITON PARK HEALTH CARE LLC	20270.68
20201209	OTHER ASSISTANCE PAYMENTS	COVID19PPE SUPPLIES/LTC PAY	EDGEWOOD MANOR HEALTH CARE	17156.14
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 PPE EQUIPMENT TEST	DELMAR GARDENS OF CHESTERFIELD	16370.05
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 HAZ PAY/PPE SUPPLIE	SILEX COMMUNITY CARE	15496.58
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	GARDEN VILLAS NORTH	13977.11
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE	LUTHERAN SENIOR SERVICES	13459.76
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	N & R OF WARRENTON INC	11457.34
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	GREGORY RIDGE HEALTH CARE CENT	10656.65
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	JACKSON MANOR	10376.74
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	GARDEN VILLAS O FALLON	10250.34
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	LUTHER MANOR RETIREMENT & NURS	8306.21
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	GRAND RIVER HEALTH CARE	7825.62
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTC BUILDINGSUP,PPE	RICHLAND CARE CENTER INC	6450.56
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE	NHC HEALTHCARE WEST PLAINS	6132.35
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	CLARK COUNTY NURSING HOME	5369.2
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 EQUIPMENT SUPPLIES	HOLDEN MANOR CARE CENTER	5111.3
20201209	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUP, PPE	OZARK RIVERVIEW MANOR	5083.57
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	DUTCHTOWN CARE CENTER	5034.18
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	WILLOW HEALTH CARE INC	4207.96
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY, PPE	BRISTOL CARE, INC	3960
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	BRISTOL CARE, INC	3960
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTCPAY,CLEANSUP,PPE	BRISTOL CARE, INC	3960
20201209	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,AIRPURIF,PPE	BRISTOL CARE, INC	3960
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	BRISTOL CARE, INC	3842.01
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	BRISTOL CARE, INC	3578.81
20201209	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY, PPE,HUMIDIF	SWEET SPRINGS VILLA	3085.76
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	BRISTOL CARE, INC	2959.31
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	BRISTOL CARE, INC	2821.82
20201209	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE	GARDEN VILLAS SOUTH	249
20201209	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RAWM/RETOLPPE	JLP VENTURES LLC	225519.17
20201209	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	KESSLER CONTAINERS LTD	110234
20201209	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	KESSLER CONTAINERS LTD	100100
20201209	PROGRAM REIMBURSEMENTS	COVID19 RETOOL/RAW MAT PPE	GOLDEN SCOUT INDUSTRIAL LLC	20610.76
20201209	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIAL PPE	KESSLER CONTAINERS LTD	19393.5

20201209	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	GOLDEN SCOUT INDUSTRIAL LLC	13439
20201209	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	KESSLER CONTAINERS LTD	5655.67
20201209	PROGRAM REIMBURSEMENTS	COVID19CHILDCARE CLEANS,PPE	DARDENNE PRESBYTERIAN CHURCH	3614
20201209	PROGRAM REIMBURSEMENTS	COVID19CHILDCARE PAY, PPE,	SAINT JOHNS LUTHERAN SCHOOL	3614
20201210	MEDICAL & DENTAL SUPPLIES	COVID19-MASKS	FASTENAL BRANCH MOJEF	2103360
20201210	MEDICAL & DENTAL SUPPLIES	COVID19-MASKS	MCKESSON MED SURG GOV SOL LLC	532400
20201210	MEDICAL & DENTAL SUPPLIES	COVID19 ISO GOWNS	JUSTICE FURNITURE MFG CO INC	489000
20201210	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	FASTENAL COMPANY	338985
20201210	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	FASTENAL COMPANY	324000
20201210	MEDICAL & DENTAL SUPPLIES	COVID19-MASKS	MCKESSON MEDICAL-SURGICAL INC	263545.24
20201210	MEDICAL & DENTAL SUPPLIES	COVID19-MASKS	MCKESSON MED SURG GOV SOL LLC	188760
20201210	MEDICAL & DENTAL SUPPLIES	COVID19FACE SHIEL	HABITATA BUILDING PRODUCTS LLC	99000
20201210	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	MORNING STAR INDUSTRIES, INC	87862.5
20201210	MEDICAL & DENTAL SUPPLIES	COVID19-MASKS	MCKESSON MED SURG GOV SOL LLC	77440
20201210	MEDICAL & DENTAL SUPPLIES	COVID19 PPE-GOWNS	MCKESSON MEDICAL-SURGICAL INC	3381.1
20201210	MEDICAL & DENTAL SUPPLIES	COVID19 PPE-GOWNS	MCKESSON MEDICAL-SURGICAL INC	2827
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	VILLAGES OF ST PETERS	175054.1
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,HVACSYS,PPE	NORTHPORT HEALTH SERVICES OF	135000
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANINGSUPP,PPE	GASCONADE MANOR NURSING HOME	118500
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE LABOR	LIVING COMMUNITY OF ST JOSEPH	107561.56
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	CEDARCREST MANOR	84921.67
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,HVACSYS,PPE	NORTHPORT HEALTH SERVICES OF	78769.9
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	MOTHER OF GOOD COUNSEL	67418.31
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC SLINGS,WIPES,PPE	SPRING VALLEY HEALTH & REHAB	65229.63
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY,PPE	NORTHWOOD HILLS CARE CENTER	50890.73
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY, PPE	NEW HAVEN CARE CENTER	49268.81
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC VSMON,LIFTS,PPE	FLORISSANT VALLEY HEALTH & REH	38007.89
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTCFILTERS,CARTS,PPE	LABELLE MANOR CARE CENTER	36602.25
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	SPRING MANOR	31020
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAPERPROD,PPE,	RIVERVIEW	21231.94
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	BLUE HILLS REST HOME INC	20790
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC CONTAINER,PPE	VILLAGES OF ST PETERS	20460
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAYROLL, PPE,	GREENVILLE HEALTH CARE CENTER	20294.22
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAPERPRO,WIPE,PPE	PARKLANE CARE AND REHABILITATI	16728.57
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC TESTKIT,CLEAN,PPE	FOUNTAINBLEAU NURSING CENTER	16289.07
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC MASKS,GOWNS,	MYERS NURSING CONVALESCENT	15973
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC CLEANSUPP, PPE	DELMAR GARDENS OF MERAMEC	15362.61
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	BETHESDA MEADOW	14710.03
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	N & R OF JONESBURG INC	13097.15
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAPERPRO,WIPE,PPE	PARKLANE CARE AND REHABILITATI	12065.22
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	CAMDENTON WINDSOR ESTATES	11414.44
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAPERPROD, PPE	DUTCHTOWN CARE CENTER	10880.53
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 PPE GLOVES	DELMAR GARDENS NORTH OPERATING	9210.12
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC N95 MASKS	MYERS NURSING CONVALESCENT	9167.74
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,BARRIER,PPE	PARKDALE MANOR CARE CENTER	8970.39
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	BELLEVUE VALLEY NURSING HOME	8809.38
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	DELMAR GARDENS SOUTH	8677.63
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC CLEANING, PPE	DIVERSICARE OF CHATEAU LLC	8298.52
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	BELLEFONTAINE GARDENS NURSING	8179.21
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	CHESTERFIELD VILLAS	7569.26
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAPERPROD,PPE	BREEZE PARK	6025.27
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC CONTRACTSRV,PPE	LAVERNA SENIOR LIVING	5971.02
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAPERPROD,PPE,	RIVERVIEW	5861.19
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC MASKS	JOHNSON COUNTY CARE CENTER	5769.05
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAPERPROD,PPE,BAG	PEARLS II EDEN FOR ELDERS LLC	5735.59
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC MASKS	MYERS NURSING CONVALESCENT	5682.93
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY, PPE	SILEX COMMUNITY CARE	5678.75
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC FOODCAB,PPE	BUTTERFIELD RESIDENTIAL CARE C	4602.43
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	DELMAR GARDENS ON THE GREEN	4593.56
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	MOUNTAIN VIEW HEALTHCARE	3961.48
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC LABOR & PPE	BRISTOL CARE, INC	3960
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY, PPE	BRISTOL CARE, INC	3960
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	BRISTOL CARE, INC	3641.23
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	CARROLL HOUSE	3513.8
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	BRISTOL CARE, INC	3369.49
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	BRISTOL CARE, INC	3059.31
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE	BRISTOL CARE, INC	2907.98
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC GOWNS	GENERAL BAPTIST NURSING HOME	2850
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY, PPE	BRISTOL CARE, INC	2637.83
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANING,PPE	BRISTOL CARE, INC	2616.4
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	MONITEAU CARE CENTER	2586.41
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	GRAND RIVER HEALTH CARE	2324.18
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,BIOHAZSUP,PPE	GERALD NURSING & REHAB	2110.48
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,STORAGE,PPE	BRISTOL CARE, INC	2056.95
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	EAST PRAIRIE NURSING CENTER	1835.62
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,MATTRESS,PPE	BRISTOL CARE, INC	1785.94
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	GARDEN VILLAS SOUTH	1495.2
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,BIOHAZSUP,PPE	GERALD NURSING & REHAB	1402.88
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PPE,CLEANING	PARKWAY HEALTH CARE CENTER	1365.65
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAPERPROD,PPE	WOODLAND MANOR OF ARNOLD LLC	1097.67
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PPE STORAGE TOTE	LIFE CARE CENTER OF GRANDVIEW	1059.55
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC LABOR, PPE	BRISTOL CARE, INC	1043.01
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC GLOVES, MASKS	MARYMOUNT MANOR LLC	1008.5
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC GLOVES	CEDAR POINTE	988.22
20201210	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAPERPROD, PPE,	FOUNTAINBLEAU LODGE	753.7
20201210	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAPERPROD,PPE	WOODLAND MANOR OF ARNOLD LLC	584.93
20201210	OTHER LABORATORY & MEDICAL SUPPLIES	COVID19 N95 MASKS	OFFICE DEPOT LLC	52500
20201210	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	GLOBAL EQUIPMENT COMPANY INC	7280.4

20201210	OTHER SPECIFIC USE SUPPLIES	COVID19 GLOVES	GLOBAL EQUIPMENT COMPANY INC	4853.6
20201210	OTHER SPECIFIC USE SUPPLIES	COVID 19 PPE WH SINGLE WALL	GRAINGER	237.5
20201210	OTHER SPECIFIC USE SUPPLIES	COVID19-FACESHIELD	PROCUREMENT CARD PAYMENT	167.64
20201210	OTHER SPECIFIC USE SUPPLIES	COVID-19 PPE	PROCUREMENT CARD PAYMENT	141.03
20201210	OTHER SPECIFIC USE SUPPLIES	COVID19-FACEMASKS	PROCUREMENT CARD PAYMENT	108
20201210	OTHER SPECIFIC USE SUPPLIES	COVID19-GLOVES	PROCUREMENT CARD PAYMENT	53
20201210	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	GREEN RESOURCES CONSULTING	81200
20201210	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	MIDWEST MEDICAL & APPAREL LLC	42702.87
20201210	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	RNN ENTERPRISES LLC	38842
20201210	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COSTS PPE	SUGARMILL DISTILLING LLC	25944.62
20201210	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	HEARTH AND HOME LLC	19890
20201210	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	MIDWEST MEDICAL & APPAREL LLC	18600
20201210	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	POLYFAB PLASTICS & SUPPLY INC	18583.06
20201210	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	HEARTH AND HOME LLC	18003.78
20201210	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	MIDWEST MEDICAL & APPAREL LLC	12612.5
20201210	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	MIDWEST MEDICAL & APPAREL LLC	12127
20201210	PROGRAM REIMBURSEMENTS	COVID19 RTL/EQP/TCH/RAWMPPE	IMPROVEYES INC	10434.84
20201210	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	LOGIC SYSTEMS SOUND &	8000
20201210	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	LOGIC SYSTEMS SOUND &	7253
20201210	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	RNN ENTERPRISES LLC	6950
20201210	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	MIDWEST MEDICAL & APPAREL LLC	5941.5
20201210	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	5720
20201210	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	LOGIC SYSTEMS SOUND &	5170
20201210	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	MIDWEST MEDICAL & APPAREL LLC	4445.3
20201210	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	POLYFAB PLASTICS & SUPPLY INC	4307.66
20201210	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	LOGIC SYSTEMS SOUND &	3690.82
20201210	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	LOGIC SYSTEMS SOUND &	2072.9
20201210	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	LOGIC SYSTEMS SOUND &	2010
20201210	PROGRAM REIMBURSEMENTS	COVID19CHILD CARE PPE	TRACI BOWDISH	967.63
20201210	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	LOGIC SYSTEMS SOUND &	943.43
20201210	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	LOGIC SYSTEMS SOUND &	900.72
20201210	PROGRAM REIMBURSEMENTS	COVID19CHILD CARE CLEAN,PPE	DIXSON, STAYCEE	421.01
20201210	PROGRAM REIMBURSEMENTS	COVID19 TECH UPDATES PPE	LOGIC SYSTEMS SOUND &	270.65
20201210	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	LOGIC SYSTEMS SOUND &	262.31
20201210	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	LOGIC SYSTEMS SOUND &	119.19
20201210	PROGRAM REIMBURSEMENTS	COVID19 RETOOL COSTS PPE	LOGIC SYSTEMS SOUND &	75.03
20201210	UNIFORMS & CLOTHING	COVID19-FACE COVERINGS	PROCUREMENT CARD PAYMENT	183.92
20201210	UNIFORMS & CLOTHING	COVID19-GLOVES	PROCUREMENT CARD PAYMENT	177.95
20201210	UNIFORMS & CLOTHING	COVID19-GLOVES	PROCUREMENT CARD PAYMENT	139.78
20201210	UNIFORMS & CLOTHING	COVID19-GLOVES	PROCUREMENT CARD PAYMENT	65.18
20201210	UNIFORMS & CLOTHING	COVID19-FACE COVERINGS	PROCUREMENT CARD PAYMENT	35.96
20201211	EXPRESS & FREIGHT SERVICES	COVID-19 SHIP PPE UPS	UNITED PARCEL SERVICE	52.09
20201211	MAILING SERVICES	COVID19 MAILSRV-PPE	OA GENERAL SERVICES - CENTRAL	10.04
20201211	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 GLVS	MCKESSON MEDICAL - SURGICAL	1571.36
20201211	MEDICAL & DENTAL SUPPLIES	C191684001 COVID19 GLOVES	MCKESSON MEDICAL - SURGICAL	576
20201211	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 N95 CG	MCKESSON MED SURG GOV SOL LLC	352.8
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC LABOR,FOGGER,PPE	HIDDEN LAKE SNF OPCO LLC	168000
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,SANITIZER,PPE	BENTWOOD NURSING & REHAB	138355.94
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE EQUIPMENT	OZARK RIVERVIEW MANOR	120932.43
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,MEDWASTE,PPE	NEW HAVEN CARE CENTER	67671.43
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY, MASKS	ESTATES OF PERRYVILLE	62514.55
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PAPERPRO,PPE	TIFFANY SPRINGS REHABILITATION	49677.51
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC CO2CON,TSTKIT,PPE	NAZARETH LIVING CENTER	49265.9
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	NHC HEALTHCARE KENNETT	45143.16
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE PAYROLL	LINCOLN COUNTY NURSING & REHAB	39794.11
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTCBARRIER,TESTS,PPE	GREEN PARK SENIOR LIVING COMMU	39075.12
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTCMATTRESS,TBL,PPE	RIVERVIEW	37543.6
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC ISOGOWNS,OXIMETE	GARDEN VIEW CARE CENTER OF CHE	36200.43
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC CO2SUPP,THERM,PPE	CARRIAGE SQUARE LIVING & REHAB	35477.52
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC COXIMTR,CLEAN,PPE	CLARK COUNTY NURSING HOME	35180.46
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE EQUIPMENT	DIVERSICARE OF ST JOSEPH LLC	32754.01
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	SRZ OP LEES SUMMIT LLC	29025
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	MISSOURI HEALTHCARE NETWORK	23100
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC FANS,SIGNS,PPE	DELMAR GARDENS NORTH OPERATING	22501.99
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	SEASONS CARE CENTER	22178.65
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUP, PPE	BETHESDA SOUTHGATE	21508.93
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC MASKS, GOWNS	REDWOOD OF CAMERON	20030.79
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,TESTSUPP,PPE	PARKDALE MANOR CARE CENTER	19725.27
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC SNEEZEGRD,PPE,	THE QUARTERS AT DES PERES	17536.5
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUP,PPE	HILLSIDE MANOR HEALTHCARE	16612.42
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC TSTKIT,CLEAN,PPE	CLARK COUNTY NURSING HOME	16046.2
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTCVSMON,PAPERPRO,PPE	DELMAR GARDENS ON THE GREEN	14255.25
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY, PPE	MOUNTAIN VIEW HEALTHCARE	14129.14
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE	MERAMEC BLUFFS	13459.76
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,SLINGS,PPE	SAINT SOPHIA HEALTHCARE LLC	12984.12
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,COURIER,PPE	GARDEN VIEW CARE CENTER OF CHE	12772.18
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 PPE/HAZARD PAY/SUPP	ROCKY RIDGE MANOR	12221.76
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	ST JOE MANOR	10892.99
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	THE COLONIAL HOME	10029.27
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	N&R OF FARMINGTON LLC	10006.25
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,IPADS, PPE	PARKVIEW HEALTH CARE FACILITY	9675.01
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,SANITIZER,PPE	SUNSET HOME	8898.2
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	STRAFFORD CARE CENTER	7406.21
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY, PPE, BPCUF	SRZ OP MEADOW VIEW LLC	7175
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PAPERPROD,PPE	POTOSI MANOR	6569.58
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 PPE EQUIPMENT	DELMAR GARDENS SOUTH	6329.46
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAPERPROD, PPE	LENOIR HEALTH CARE CENTER	5287.08
20201211	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	WALNUT STREET ASSISTED LIVING	5153.37



20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC CLEANSUPP, PPE	DELMAR GARDENS OF MERAMEC	4654.24
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC WIPES, MASKS, GLVS	CLARK COUNTY NURSING HOME	4543.6
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC AVAPRENT, PPE, ICE	GARDEN VIEW CARE CENTER	4100.27
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAPERPROD, PPE	HEISINGER LUTHERAN HOME	4013.04
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC MASKS	MOUNT CARMEL COMMUNITIES LLC	3998.32
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC CLEANSUPP, PPE	MERAMEC BLUFFS	3496.93
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY, BARRIERS, PPE	DEXTER LIVING CENTER	2853.11
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY, BIOHAZSUP, PPE	ROCKY RIDGE MANOR	2711.27
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC BARRIER, SANIT, PPE	SYLVIA G THOMPSON RESIDENCE	2529.93
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAPERPROD, PPE	PEARLS II EDEN FOR ELDERS LLC	2501.44
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY, MATTRESS, PPE	BRISTOL CARE, INC	2317.58
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC SANITIZR, WIPE, PPE	CLARK COUNTY NURSING HOME	2154.34
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC MASKS	MYERS NURSING CONVALESCENT	1972.88
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC CLEANSUPP, PPE	CLARK COUNTY NURSING HOME	1583
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC MASKS, GLOVES	CLARK COUNTY NURSING HOME	1393.2
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY, CLEANSUPP, PPE	LIFE CARE CENTER OF CARROLLTON	1190.9
20201211	OTHER ASSISTANCE PAYMENTS	COVID19 LTC THERMOM, PPE, BAGS	ST AGNES HOME	772.33
20201211	PROGRAM REIMBURSEMENTS	COVID19 RWMAT/RTL/EQUIP PPE	SUPERMARKET MERCHANDISING &	300000
20201211	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/RAW MAT PPE	SUGARMILL DISTILLING LLC	201054.5
20201211	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	SUGARMILL DISTILLING LLC	76566.25
20201211	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	JUSTICE FURNITURE MFG CO INC	48840
20201211	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COSTS PPE	RNN ENTERPRISES LLC	29409.52
20201211	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	RNN ENTERPRISES LLC	10000
20201211	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	THE COLLECTIVE THREAD	9768.88
20201211	PROGRAM REIMBURSEMENTS	COVID19 CHILDCAREPAYROLL, PPE	RADIANT LIFE DAYCARE	3614
20201211	PROGRAM REIMBURSEMENTS	COVID19 CHILDCARPAY, PPE	PERFECT GIFT NURSERY	2710
20201211	PROGRAM REIMBURSEMENTS	COVID19 SOFTWARE PPE	THE COLLECTIVE THREAD	2543.38
20201211	PROGRAM REIMBURSEMENTS	COVID19 CHILDCAREPAYROLL, PPE	HINES, KRISTI	1808
20201211	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	RNN ENTERPRISES LLC	1342.23
20201211	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	THE COLLECTIVE THREAD	1209
20201211	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	THE COLLECTIVE THREAD	1079.23
20201211	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	THE COLLECTIVE THREAD	886.74
20201211	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	THE COLLECTIVE THREAD	362.59
20201214	AID EDUC INSTT & SCHOOL DIST	COVID19 MASK, SOAP, UM#22	UNIVERSITY OF MO-COLUMBIA	819212.18
20201214	CUSTODIAL SUPPLIES	COVID-19 PPE DISENFACTANT	PROCUREMENT CARD PAYMENT	122.68
20201214	CUSTODIAL SUPPLIES	COVID19 DSNCT WPES/MASKS	PROCUREMENT CARD PAYMENT	110.96
20201214	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UNITED PARCEL SERVICE	20465.87
20201214	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	COYOTE LOGISTICS LLC	1325
20201214	EXPRESS & FREIGHT SERVICES	COVID-19 PPE SHIPPING	UPS FREIGHT	365.15
20201214	IN-STATE USAGE OF STATE VEHICLE	COVID19 DELIV PPE/SUPPL	OA GENERAL SERVICES - CARPOOL	113.41
20201214	IN-STATE USAGE OF STATE VEHICLE	COVID19 DELIV PPE/SUPPL	OA GENERAL SERVICES - CARPOOL	50
20201214	MEDICAL & DENTAL SUPPLIES	COVID-19 MASK INSERTS	PROCUREMENT CARD PAYMENT	296.92
20201214	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 FACE MASK	AMAZON CAPITAL SERVICES INC	159.9
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY, WIPES, PPE	ROSEWOOD HEALTH AND REHAB	189933.2
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY, CLEANSUPP, PPE	MOUNTAIN VIEW HEALTHCARE	138313.67
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY, PAPERPRO, PPE	NORTHWOOD HILLS CARE CENTER	57289.22
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY, CLEANSUPP, PPE	DELMAR GARDENS ON THE GREEN	49885.31
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC CLEANSUPP, PPE	ST AGNES HOME	36760.9
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	VILLAGES OF JACKSON CREEK LLC	20460
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	HOLDEN MANOR CARE CENTER	18327.73
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	BELLEVUE VALLEY NURSING HOME	15446.94
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY, O2SUPP, PPE	RANCHO MANOR HEALTHCARE &	14801.4
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC BARRIERS, CART, PPE	BIG BEND WOODS HEALTHCARE	11196.63
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE GOWNS	THE SUMMIT	8310.21
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	LABELLE MANOR CARE CENTER	7687.89
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC BIOHAZP/U, PPE	ST AGNES HOME	6835.74
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAPERPROD, PPE	DELMAR GARDENS ON THE GREEN	6767.39
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	DELMAR GARDENS NORTH OPERATING	6504.13
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	DELMAR GARDENS SOUTH	5939.68
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	MANOR GROVE INCORPORATED	5139.45
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	BRISTOL CARE, INC	3599.06
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	BRISTOL CARE, INC	3510.49
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY PPE EQUIP	BRISTOL CARE, INC	3329.12
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	SALEM CARE CENTER	3073.56
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE LABOR	BRISTOL CARE, INC	2918.94
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	GLENWOOD HEALTHCARE	2545.25
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC TABLES, FANS, PPE	DELMAR GARDENS ON THE GREEN	2276.1
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	BRISTOL CARE, INC	1923.6
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE	GENERAL BAPTIST NURSING HOME	1905.8
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC-PAY PPE	BRISTOL CARE, INC	1807.35
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY PPE SUPPL	BRISTOL CARE, INC	1461.99
20201214	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE GLOVES	THE SUMMIT	467.83
20201214	OTHER SPECIFIC USE SUPPLIES	COVID19 PPE 1125	IPROMO	10264.41
20201214	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASK- HAN S	RADEMAN, TERRI	186.84
20201214	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASK- HAN S	RADEMAN, TERRI	152.49
20201214	OTHER SPECIFIC USE SUPPLIES	COVID-19 FACE MASK- HAN S	RADEMAN, TERRI	140.68
20201214	UNIFORMS & CLOTHING	COVID19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	483.88
20201214	UNIFORMS & CLOTHING	COVID-19 FACE MASK	AMAZON CAPITAL SERVICES INC	349.93
20201214	UNIFORMS & CLOTHING	COVID19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	338.49
20201214	UNIFORMS & CLOTHING	COVID19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	232.26
20201214	UNIFORMS & CLOTHING	COVID-19 MASKS	PROCUREMENT CARD PAYMENT	159.99
20201214	UNIFORMS & CLOTHING	COVID-19 FACE MASK	PROCUREMENT CARD PAYMENT	119.96
20201214	UNIFORMS & CLOTHING	COVID19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	68.18
20201214	UNIFORMS & CLOTHING	COVID19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	38.82
20201214	UNIFORMS & CLOTHING	COVID19-FACE MASKS	PROCUREMENT CARD PAYMENT	27.5
20201215	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE	SCENIC NURSING AND	93443.73
20201215	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY, RESPIRATR, PPE	MONTEREY PARK NURSING CENTER	73831.58
20201215	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	WINDEMERE RESIDENTIAL CARE	1188.9

20201215	OTHER SPECIFIC USE SUPPLIES	COVID19 NTRLE/RBBR GLOVES	FLEET CHARGE	238.44
20201215	OTHER SPECIFIC USE SUPPLIES	COVID19 NTRLE/RBBR GLOVES	FLEET CHARGE	167.28
20201215	PROGRAM REIMBURSEMENTS	COVID19 RETOOL/RAW MAT PPE	GATEWAY INDUSTRIES OF ELDON	119752.68
20201215	PROGRAM REIMBURSEMENTS	COVID19CHILDCARE PAY,PPE,	LIL BITS DAYCARE LLC	1808
20201215	PROGRAM REIMBURSEMENTS	COVID19CHILDCARESANTITIZE,PPE	HUNNI AND KING S LEARNING CENT	1600.48
20201215	PROGRAM REIMBURSEMENTS	COVID19CHILDCARE CLEAN,PPE	EXPLORATION STATION	639.03
20201215	PROGRAM REIMBURSEMENTS	COVID19CHILDCARE PPE,THERMO	PLAY TO LEARN MINISTRIES	497.59
20201215	PROGRAM REIMBURSEMENTS	COVID19CHILDCARE CLEAN,PPE	SHAWN RAGAIN	213.63
20201215	UNIFORMS & CLOTHING	COVID19 PPE 4 OUTSIDE BLDG	PROCUREMENT CARD PAYMENT	469.53
20201215	UNIFORMS & CLOTHING	COVID19 PPE 4 OUTSIDE BLDG	PROCUREMENT CARD PAYMENT	210.94
20201216	CUSTODIAL SUPPLIES	COVID19-GLOVES	FASTENAL COMPANY	58.2
20201216	CUSTODIAL SUPPLIES	COVID19-GLOVES	FASTENAL COMPANY	49.68
20201216	CUSTODIAL SUPPLIES	COVID19-GLOVES	FASTENAL COMPANY	27.9
20201216	CUSTODIAL SUPPLIES	COVID19-GLOVES	FASTENAL COMPANY	18.6
20201216	CUSTODIAL SUPPLIES	COVID19-GLOVES	FASTENAL COMPANY	15.54
20201216	CUSTODIAL SUPPLIES	COVID19-GLOVES	FASTENAL COMPANY	15.54
20201216	MEDICAL & DENTAL SUPPLIES	COVID-19 FACESH	WEGMANN COMPANIES LLC	32250
20201216	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	MISSOURI VOCATIONAL	4000
20201216	MEDICAL & DENTAL SUPPLIES	COVID19 GOWNS	MISSOURI VOCATIONAL	2025
20201216	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	CONCORDANCE HEALTHCARE	1548
20201216	MEDICAL & DENTAL SUPPLIES	COVID19 FACE SHIELD	HENRY SCHEIN INC	1299.84
20201216	MEDICAL & DENTAL SUPPLIES	COVID-19 GOGGLES	FISHER SCIENTIFIC LLC	757.44
20201216	MEDICAL & DENTAL SUPPLIES	COVID19 GOWNS	MISSOURI VOCATIONAL	675
20201216	OTHER ASSISTANCE PAYMENTS	COVID19LTC MATTRESSES,PPE,	DUTCHTOWN CARE CENTER	27186.79
20201216	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	MONTICELLO HOUSE	15535.02
20201216	OTHER ASSISTANCE PAYMENTS	COVID19LTCIPAD,CLEANSUP,PPE	PRIMROSE OF KANSAS CITY	14520
20201216	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE PAYROLL	SILVER SPUR	12164.98
20201216	OTHER ASSISTANCE PAYMENTS	COVID19LTCCLEANS,BPOMN,PPE	DIVERSICARE OF RIVERSIDE LLC	11858.54
20201216	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	N & R OF MONTICELLO INC	11832.24
20201216	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	DELMAR GARDENS OF MERAMEC	10221.9
20201216	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE PAY	TIPTON OAK MANOR	9094.91
20201216	OTHER ASSISTANCE PAYMENTS	COVID19LTCPAY,WASTECANS,PPE	CHARLESTON MANOR	7347.43
20201216	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	DIXON NURSING & REHAB	6586.22
20201216	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	DIXON NURSING & REHAB	5956.43
20201216	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	MAPLE GROVE LODGE	5188.38
20201216	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	DELMAR GARDENS OF MERAMEC	3999.24
20201216	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	TIPTON OAK MANOR	2753.45
20201216	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	ADVANCE NURSING CENTER	2645.03
20201216	OTHER LABORATORY & MEDICAL SUPPLIES	COVID19 N95 MASK	BK DISTRIBUTING LLC	81900
20201216	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	BRENNTAG MID-SOUTH	250706.74
20201216	PROGRAM REIMBURSEMENTS	COVID19 RTL/EQP/DSGN/RMTPE	IMPROVEYES INC	79988.11
20201216	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	MK MACHINING LLC	33980
20201216	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	JUSTICE FURNITURE MFG CO INC	15390
20201216	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	MK MACHINING LLC	15059.5
20201216	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	MK MACHINING LLC	14000
20201216	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	JUSTICE FURNITURE MFG CO INC	9039.6
20201216	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	MK MACHINING LLC	5800
20201216	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	MK MACHINING LLC	4894
20201216	PROGRAM REIMBURSEMENTS	COVID19CHILDCARE INK, PPE	BROWNLEE, PEARLIE K	3614
20201216	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	MK MACHINING LLC	3000
20201216	PROGRAM REIMBURSEMENTS	COVID19 RAW MAT/SUPPLIESPPE	MK MACHINING LLC	2571.65
20201216	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	JUSTICE FURNITURE MFG CO INC	2436
20201216	UNIFORMS & CLOTHING	COVID-19 FACE COVERINGS	PROCUREMENT CARD PAYMENT	241.92
20201217	CUSTODIAL SUPPLIES	COVID-19 PPE, MARKERS	DOUBLE J AUTO PARTS LLC	65.4
20201217	MEDICAL & DENTAL SUPPLIES	5-GOGGLES	SWATA GROUP LLC	530150.4
20201217	MEDICAL & DENTAL SUPPLIES	ITEM 8-GOGGLES	BK DISTRIBUTING LLC	190962
20201217	MEDICAL & DENTAL SUPPLIES	COVID CONT#CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	1728
20201217	MEDICAL & DENTAL SUPPLIES	COVID CONT#CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	1678.7
20201217	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	475.32
20201217	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,IPAD,PPE,	LIFE CARE CENTER OF GRANDVIEW	69886.13
20201217	OTHER ASSISTANCE PAYMENTS	COVID19LTCIPAD,CLEANSUP,PPE	STONEBRIDGE CHILLICOTHE	55181.86
20201217	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE PAYROLL	NEVADA CITY NURSING HOME	50110.61
20201217	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	HERMITAGE NURSING & REHAB	41971.06
20201217	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	JORDAN CREEK NURSING & REHAB	38625.46
20201217	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	NATHAN RICHARD HEALTH CARE	27738.57
20201217	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	SONSHINE MANOR	21850.73
20201217	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	PIN OAKS LIVING CENTER	15884.59
20201217	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	TIPTON OAK MANOR	13935.65
20201217	OTHER ASSISTANCE PAYMENTS	COVID19LTC EQUIP, PPE	BIG BEND RETREAT INC	11196.63
20201217	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	PIN OAKS LIVING CENTER	10438.89
20201217	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUP,TWL,PPE	JEFFERSON CITY RETIREMENT LLC	8006.25
20201217	OTHER ASSISTANCE PAYMENTS	COVID19LTCPAY,PAPERPROD,PPE	RIDGEVIEW LIVING COMMUNITY	7628.62
20201217	OTHER ASSISTANCE PAYMENTS	COVID19LTCCLART,CLEANSUP,PPE	GAINESVILLE HEALTH CARE CENTER	7488.2
20201217	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,MAILSUP,PPE	MALDEN NURSING & REHAB	6827.1
20201217	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	THE VILLA AT BLUE RIDGE	6624.25
20201217	OTHER ASSISTANCE PAYMENTS	COVID19LTCPAY,BIOHAZSUP,PPE	RIDGEVIEW LIVING COMMUNITY	5484.05
20201217	OTHER ASSISTANCE PAYMENTS	COVID19 PPE/SANITIZER/LTC P	THE VILLAS	5220.88
20201217	OTHER ASSISTANCE PAYMENTS	COVID19LTCPAY,BIOHAZSUP,PPE	CHARLESTON MANOR	5118.44
20201217	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE PAYROLL	MONTICELLO HOUSE	4531.28
20201217	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	BRISTOL CARE, INC	3960
20201217	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,GLOVES,NEBUL	SMITHVILLE LIVING CENTER	2916.73
20201217	OTHER ASSISTANCE PAYMENTS	COVID19 LTC MASKS	CENTURY PINES ASSISTED LIVING	650.8
20201217	OTHER LABORATORY & MEDICAL SUPPLIES	COVID19/FACESHIEL	OFFICE DEPOT LLC	11686.66
20201217	OTHER SPECIFIC USE SUPPLIES	COVID19-WIPES, FACE MASKS	PROCUREMENT CARD PAYMENT	252.18
20201217	OTHER SPECIFIC USE SUPPLIES	COVID19-FACE MASKS	PROCUREMENT CARD PAYMENT	110.82
20201217	OTHER SPECIFIC USE SUPPLIES	COVID19-FACE COVERINGS	PROCUREMENT CARD PAYMENT	89.94
20201217	OTHER SPECIFIC USE SUPPLIES	COVID19-GLOVES, SANITIZER	PROCUREMENT CARD PAYMENT	38.78
20201218	AID EDUC INSTIT & SCHOOL DIST	COVID19PPE,CLEANSTLOUISCC#8	ST LOUIS COMMUNITY COLLEGE	187619.77



20201218	EXPRESS & FREIGHT SERVICES	COVID19 - PPE SHIPPING	UNITED PARCEL SERVICE	15177.98
20201218	EXPRESS & FREIGHT SERVICES	COVID19 PPE SHIPPING	UNITED PARCEL SERVICE	14909.8
20201218	MEDICAL & DENTAL SUPPLIES	COVID 19 MASK	VERITIV OPERATING COMPANY	980000
20201218	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	FASTENAL COMPANY	335340
20201218	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	FASTENAL COMPANY	321570
20201218	MEDICAL & DENTAL SUPPLIES	COVID-19 MASK	CONCORDANCE HEALTHCARE	299520
20201218	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	CONCORDANCE HEALTHCARE	299520
20201218	OFFICE SUPPLIES	COVID19 FACE MASKS	MISSOURI VOCATIONAL	3520
20201218	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES/LTC PA	LEWIS AND CLARK GARDENS	89534.94
20201218	OTHER ASSISTANCE PAYMENTS	COVID19 HAZARD PAY/PPE SUPP	ROCKY RIDGE MANOR	35328.02
20201218	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	COTTON POINT LIVING CENTER	7735.41
20201218	OTHER SPECIFIC USE SUPPLIES	COVID-19 N95 MASKS	BK DISTRIBUTING LLC	27518.4
20201218	PROGRAM REIMBURSEMENTS	COVID19 EQUIP/DESGN/RAWMPPE	AIR REPRESENTATIVES LLC	297551.1
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAWMAT/SUPPLY PPE	HABITATA BUILDING PRODUCTS LLC	70000
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	18067.22
20201218	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COSTS PPE	GREEN RESOURCES CONSULTING	15300
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	6742.3
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	4655.28
20201218	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	POLYFAB PLASTICS & SUPPLY INC	4210.75
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	3290.8
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	2908.5
20201218	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	POLYFAB PLASTICS & SUPPLY INC	2900.77
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	2875
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	2860.47
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	2416.8
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	2288.48
20201218	PROGRAM REIMBURSEMENTS	COVID19 EQUIPMENT PPE	POLYFAB PLASTICS & SUPPLY INC	2233.08
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	2078.7
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	1672.45
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	1602.06
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	1582.72
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	1572.65
20201218	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COSTS PPE	POLYFAB PLASTICS & SUPPLY INC	1503
20201218	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COSTS PPE	POLYFAB PLASTICS & SUPPLY INC	1425.42
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	1322.72
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	1305.68
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	1284.6
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	1219.05
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	1195
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	1086.15
20201218	PROGRAM REIMBURSEMENTS	COVID19 RAW MATERIALS PPE	POLYFAB PLASTICS & SUPPLY INC	1049.69
20201218	PROGRAM REIMBURSEMENTS	COVID19 RETOOLING COSTS PPE	GREEN RESOURCES CONSULTING	649.85
20201221	LAW ENFORCEMENT SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	20.95
20201221	LAW ENFORCEMENT SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	20.95
20201221	LAW ENFORCEMENT SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	11.18
20201221	LAW ENFORCEMENT SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	9.78
20201221	MEDICAL & DENTAL SUPPLIES	COVID19 PPE GLOVE	EMPIRE MANAGED SOLUTIONS	1201800
20201221	MEDICAL & DENTAL SUPPLIES	COVID19 PPE GLOVE	EMPIRE MANAGED SOLUTIONS	682050
20201221	MEDICAL & DENTAL SUPPLIES	COVID19 PPE MASKS	CONCORDANCE HEALTHCARE	299520
20201221	MEDICAL & DENTAL SUPPLIES	COVID19 PPE GLOVE	SWATA GROUP LLC	289420
20201221	MEDICAL & DENTAL SUPPLIES	COVID19 PPE GOGGL	SWATA GROUP LLC	265075.2
20201221	MEDICAL & DENTAL SUPPLIES	COVID19 PPE GOWNS	CONCORDANCE HEALTHCARE	198198
20201221	MEDICAL & DENTAL SUPPLIES	COVID19 PPE GLOVE	EMPIRE MANAGED SOLUTIONS	158700
20201221	MEDICAL & DENTAL SUPPLIES	COVID19 PPE GLOVE	SWATA GROUP LLC	145580
20201221	MEDICAL & DENTAL SUPPLIES	COVID19 PPE GOWNS	CONCORDANCE HEALTHCARE	75348
20201221	MEDICAL & DENTAL SUPPLIES	COVID19 PPE GOWN	CONCORDANCE HEALTHCARE	59270.4
20201221	MEDICAL & DENTAL SUPPLIES	COVID-19 PPE	INX MEDICAL LLC	17500
20201221	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	FASTENAL COMPANY	12150
20201221	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	934.95
20201221	MEDICAL & DENTAL SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	41.6
20201221	OTHER ASSISTANCE PAYMENTS	COVID19 PPE SUPPLIES	RIDGEVIEW LIVING COMMUNITY	34630.64
20201221	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	AUBURN RIDGE LIVING CENTER	1308.89
20201221	OTHER ASSISTANCE PAYMENTS	COVID19LTCPAY,HUMIDFR,PPE	HARTVILLE CARE CENTER	1111.78
20201221	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE FOOD SUPPLY	AUBURN RIDGE LIVING CENTER	905
20201221	UNIFORMS & CLOTHING	COVID: RACHET FACESHIELDS	GRAINGER INDUSTRIAL SUPPLY	276.6
20201222	EXPRESS & FREIGHT SERVICES	COVID19 SHIP PPE	UNITED PARCEL SERVICE	43.17
20201222	LAW ENFORCEMENT SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	139.9
20201222	LAW ENFORCEMENT SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	62.86
20201222	LAW ENFORCEMENT SUPPLIES	COVID-19 GLOVES	PROCUREMENT CARD PAYMENT	41.91
20201222	MEDICAL & DENTAL SUPPLIES	COVID19-MASKS	MCKESSON MED SURG GOV SOL LLC	266200
20201222	MEDICAL & DENTAL SUPPLIES	COVID19-MASKS	MCKESSON MED SURG GOV SOL LLC	35332
20201222	MEDICAL & DENTAL SUPPLIES	COVID19C182584001 SHOE CVRS	GRAINGER	1214.16
20201222	MEDICAL & DENTAL SUPPLIES	COVID19 C191684004 GLOVES	HENRY SCHEIN INC	661.4
20201222	MEDICAL & DENTAL SUPPLIES	COVID19 PPE	PROCUREMENT CARD PAYMENT	551
20201222	MEDICAL & DENTAL SUPPLIES	COVID19 PPE	PROCUREMENT CARD PAYMENT	325
20201222	MEDICAL & DENTAL SUPPLIES	COVID19 PPE	PROCUREMENT CARD PAYMENT	302
20201222	MEDICAL & DENTAL SUPPLIES	COVID19 PPE	PROCUREMENT CARD PAYMENT	272
20201222	MEDICAL & DENTAL SUPPLIES	COVID19 PPE	PROCUREMENT CARD PAYMENT	242
20201222	MEDICAL & DENTAL SUPPLIES	COVID19 PPE	PROCUREMENT CARD PAYMENT	83
20201222	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 F MASK -HAND SAN	PROCUREMENT CARD PAYMENT	599.5
20201222	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,PAPERPRO,PPE	VSL SPRINGFIELD MANOR LLC	70093.36
20201222	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE PAY SUPPLY	FULTON NURSING & REHAB	5017.83
20201222	OTHER EQUIPMENT RENTALS	COVID19 PPE DELIVERY	PROCUREMENT CARD PAYMENT	637.14
20201222	UNIFORMS & CLOTHING	COVID-19 FACEMASKS	PROCUREMENT CARD PAYMENT	42
20201223	EXPRESS & FREIGHT SERVICES	COVID19-PPE SHIPPING	UNITED PARCEL SERVICE	18845.34
20201223	MEDICAL & DENTAL SUPPLIES	COVID19 PPE GOWNS	CONCORDANCE HEALTHCARE	335689.2
20201223	MEDICAL & DENTAL SUPPLIES	COVID19 PPE GOWNS	CONCORDANCE HEALTHCARE	330220.8
20201223	MEDICAL & DENTAL SUPPLIES	COVID19 GOGGLES	SWATA GROUP LLC	254360.8

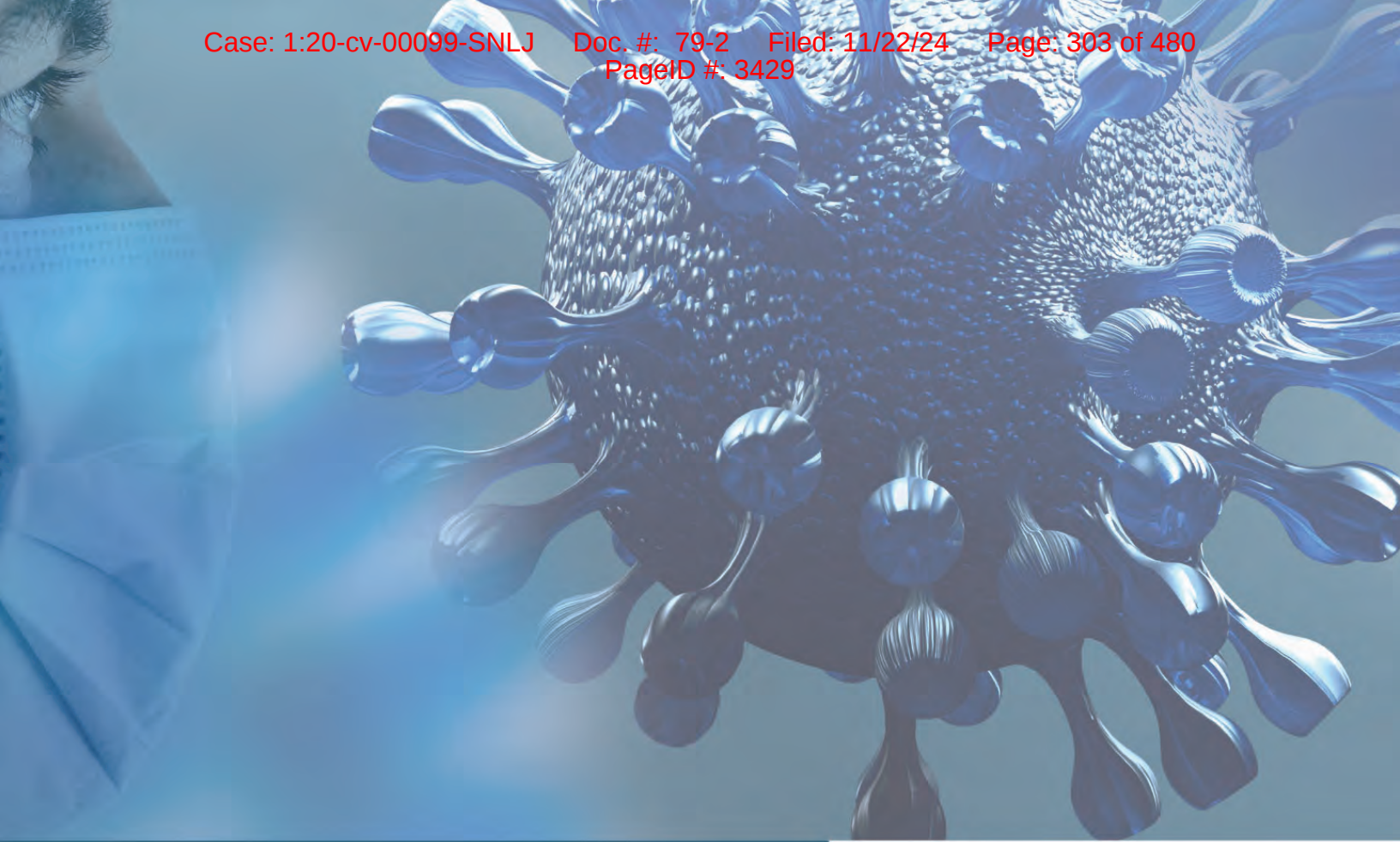
20201223	MEDICAL & DENTAL SUPPLIES	COVID19 PPE GOWNS	CONCORDANCE HEALTHCARE	138297.6
20201223	OFFICE SUPPLIES	COVID-19 SAFETY GOGGLEFACE	PROCUREMENT CARD PAYMENT	274.5
20201223	OTHER ADMINISTRATIVE SUPPLIES	COVID-19 FACE MASK	TOP DRAWER CUSTOM LLC	5500
20201223	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,TESTKIT,PPE	NORTH VILLAGE PARK	99434.07
20201223	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE PAY SUPPLY	SPRINGFIELD REHABILITATION AND	79985.25
20201223	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAPERPROD,PPE,	VILLAGE ASSISTED LIVING	47417.15
20201223	OTHER ASSISTANCE PAYMENTS	COVID19 LTC SLINGS,PPE,WIPE	SPRING VALLEY HEALTH & REHAB	27047.87
20201223	OTHER ASSISTANCE PAYMENTS	COVID19LTC TELEHLTH,PPE,CLEA	STONEBRIDGE OAK TREE	23156.48
20201223	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY,MEALSUP,PPE	BROOKE HAVEN HEALTHCARE	21675.57
20201223	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE PAY SUPPLY	SPRINGFIELD REHABILITATION AND	16353.75
20201223	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	VSL SPRINGFIELD MANOR LLC	10572.53
20201223	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	VSL SPRINGFIELD MANOR LLC	5725.96
20201223	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE CSUPPLY	VSL SPRINGFIELD MANOR LLC	5694.44
20201223	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE CLEANINGSUP	GASCONADE TERRACE RETIREMENT	5349.14
20201223	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	VSL SPRINGFIELD MANOR LLC	3935.76
20201223	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAPERPROD, PPE,	AUBURN RIDGE LIVING CENTER	1493.34
20201223	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAPERPROD, PPE,	AUBURN RIDGE LIVING CENTER	1035.8
20201223	OTHER ASSISTANCE PAYMENTS	COVID19LTC CLEANSUP, PPE,	AUBURN RIDGE LIVING CENTER	1006.56
20201223	OTHER ASSISTANCE PAYMENTS	COVID19LTC THERMOMCVR,PPE,	AUBURN RIDGE LIVING CENTER	730.47
20201223	OTHER ASSISTANCE PAYMENTS	COVID19 LTC GLOVES SUPPLIES	AUBURN RIDGE LIVING CENTER	87.95
20201223	OTHER SPECIFIC USE SUPPLIES	COVID-19 NITRILE GLOVES	IPROMO	19367.29
20201223	OTHER SPECIFIC USE SUPPLIES	COVID-19 STAFF GOWN	MISSOURI VOCATIONAL	4549.5
20201223	OTHER SPECIFIC USE SUPPLIES	COVID19 AIR PURIFIER, MASKS	GRAINGER INC	4129.65
20201223	OTHER SPECIFIC USE SUPPLIES	COVID-19 KN95 RESPIRATOR	IPROMO	1622.33
20201223	OTHER SPECIFIC USE SUPPLIES	COVID19 PPE GOGGLES	GRAINGER INC	674
20201228	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	CONCORDANCE HEALTHCARE	299520
20201228	MEDICAL & DENTAL SUPPLIES	COVID19 MASKS	CONCORDANCE HEALTHCARE	299520
20201228	OTHER ASSISTANCE PAYMENTS	COVID19 LTC THERMOM,PPE	SCENIC NURSING AND	57267
20201228	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	PARKSIDE MANOR	36745.37
20201228	OTHER ASSISTANCE PAYMENTS	COVID19LTCPPRPROD,CLEAN,PPE	JAMES RIVER NURSING AND	26480.63
20201228	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,SANITIZER,PPE	STONECREST HEALTHCARE	24703.46
20201228	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	PARKSIDE MANOR	22943.25
20201228	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANING,PPE	THE VILLA AT BLUE RIDGE	18292.32
20201228	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,CLEANSUP,PPE	GREENVILLE HEALTH CARE CENTER	15674.72
20201228	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,MEDWSTPU,PPE	MAGNOLIA SQUARE NURSING AND	12161.72
20201228	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAYROLL, PPE	FSC OF LAKE SAINT LOUIS LLC	11612.06
20201228	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,MEDWASTE,PPE	DIXON NURSING & REHAB	3658.99
20201228	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,BIOHAZP/U,PPE	MALDEN NURSING & REHAB	1761.07
20201229	EXPRESS & FREIGHT SERVICES	COVID19 SHIP PPE	UNITED PARCEL SERVICE	10.67
20201229	EXPRESS & FREIGHT SERVICES	COVID19 SHIP PPE	UNITED PARCEL SERVICE	6.75
20201229	MEDICAL & DENTAL SUPPLIES	COVID19 GOWNS	CONCORDANCE HEALTHCARE	871088.4
20201229	MEDICAL & DENTAL SUPPLIES	COVID19 GOWNS	CONCORDANCE HEALTHCARE	638656.2
20201229	MEDICAL & DENTAL SUPPLIES	COVID19-GLOVES	DIGITAL DOLPHIN SUPPLIES LLC	316800
20201229	MEDICAL & DENTAL SUPPLIES	COVID19 GOWNS	CONCORDANCE HEALTHCARE	237081.6
20201229	MEDICAL & DENTAL SUPPLIES	COVID19 GOWNS	GRAINGER	197950.5
20201229	MEDICAL & DENTAL SUPPLIES	COVID19 GOWNS	GRAINGER	99000
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20201229	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAYROLL PPE	CLEARVIEW NURSING CENTER	11027.02
20201229	OTHER ASSISTANCE PAYMENTS	COVID19LTCRESPIRATORS,PPE,	FOUNTAINBLEAU LODGE	9999
20201229	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE EQUIPMENT	VSL SPRINGFIELD MANOR LLC	8362.21
20201229	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE PAYROLL	PARKSIDE MANOR	7155.6
20201229	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,BARRIERS,PPE	ADVANCE NURSING CENTER	6413.77
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20201230	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	MCKESSON MEDICAL-SURGICAL INC	1912.5
20201230	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	MISSOURI VOCATIONAL	1134
20201230	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	781.2
20201230	MEDICAL & DENTAL SUPPLIES	COVID-19 MASKS	MCKESSON MEDICAL-SURGICAL INC	321.11
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20201230	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	303.06
20201230	MEDICAL & DENTAL SUPPLIES	COVID-19 FACE SHIELDS	MCKESSON MEDICAL-SURGICAL INC	248.32
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20201230	MEDICAL & DENTAL SUPPLIES	COVID-19 GOWNS	MISSOURI VOCATIONAL	162
20201230	MEDICAL & DENTAL SUPPLIES	COVID-19 N95 MASKS	LOWES BUSINESS ACCOUNT	92.05
20201230	MEDICAL & DENTAL SUPPLIES	COVID19 CC191684005 PPE	MCKESSON MEDICAL - SURGICAL	39.06
20201230	MEDICAL & DENTAL SUPPLIES	COVID19 N95 MASKS	LOWES BUSINESS ACCOUNT	37.96
20201230	MEDICAL & DENTAL SUPPLIES	COVID-19 N95 MASKS	LOWES BUSINESS ACCOUNT	16.5
20201230	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	THE MAPLES HEALTH AND	37838.61
20201230	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY SPRAYER PPE	AURORA NURSING CENTER	37470.44
20201230	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIESPAY	MARK TWAIN MANOR	33123.03
20201230	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,O2CONCEN,PPE	NHC HEALTHCARE-JOPLIN	26663.56
20201230	OTHER ASSISTANCE PAYMENTS	COVID19 LTC CONTRACTWORKPPE	MAPLE GROVE LODGE	25612.96
20201230	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY PPE	LEGENDARY NURSING & REHABILITA	23628.65
20201230	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PAY PPE	CARNEGIE VILLAGE REHABILITATIO	22193.86
20201230	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE ESPRAYER	MERAMEC NURSING CENTER	17912.3
20201230	OTHER ASSISTANCE PAYMENTS	COVID19LTC PAY,THERMOM,PPE	COMMUNITY CARE CENTER OF LEMAY	17663.5
20201230	OTHER ASSISTANCE PAYMENTS	COVID19 LTC MASK CSTAFF	MARK TWAIN MANOR	16458.39
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20201230	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE ESPRAYER	ST GENEVIEVE CARE CENTER	9213.34

20201230	OTHER ASSISTANCE PAYMENTS	COVID19LTC MASKS,GOWNS,GLVS	LEWIS COUNTY NURSING HOME	8668.13
20201230	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE EQUIPMENT	TIFFANY SPRINGS SENIOR CARE	3925.1
20201230	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE THERMOMETER	SILVERSTONE SNF LLC	2690.19
20201230	OTHER ASSISTANCE PAYMENTS	COVID19 LTC GLOVES	THE MANOR	1067.07
20201230	UNIFORMS & CLOTHING	COVID: ACQUIRED FAC FACE SHI	CONCORDANCE HEALTHCARE	250
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20201231	MEDICAL & DENTAL SUPPLIES	COVID19 FACE CVR	MISSOURI VOCATIONAL	10000
20201231	MEDICAL & DENTAL SUPPLIES	COVID19 FACE CVR	MISSOURI VOCATIONAL	8000
20201231	MEDICAL & DENTAL SUPPLIES	21-NITRILE EXAM GLOVE DUE T	FISHER SCIENTIFIC LLC	7548.4
20201231	MEDICAL & DENTAL SUPPLIES	21-NITRILE EXAM GLOVE DUE T	FISHER SCIENTIFIC LLC	4074.8
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20201231	MEDICAL & DENTAL SUPPLIES	COVID19 FACE CVR	MISSOURI VOCATIONAL	2400
20201231	MEDICAL & DENTAL SUPPLIES	21-NITRILE EXAM GLOVE DUE T	FISHER SCIENTIFIC LLC	2338
20201231	MEDICAL & DENTAL SUPPLIES	COVID19 FACE CVR	MISSOURI VOCATIONAL	1800
20201231	MEDICAL & DENTAL SUPPLIES	COVID 19 GOGGLES	BK DISTRIBUTING LLC	1236
20201231	MEDICAL & DENTAL SUPPLIES	COVID19 FACE CVR	MISSOURI VOCATIONAL	600
20201231	MEDICAL & DENTAL SUPPLIES	COVID19 FACE CVR	MISSOURI VOCATIONAL	560
20201231	MEDICAL & DENTAL SUPPLIES	COVID19 FACE CVR	MISSOURI VOCATIONAL	200
20201231	MEDICAL & DENTAL SUPPLIES	COVID19 FACE CVR	MISSOURI VOCATIONAL	200
20201231	OTHER ASSISTANCE PAYMENTS	COVID19LTC STAFF,OXIMTR,PPE	WEST COUNTY CARE CENTER INC	34346.95
20201231	OTHER ASSISTANCE PAYMENTS	COVID19LTC UNIFORMS,PPE	CRYSTAL CREEK HEALTH	27273.09
20201231	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE CONTRACT ST	LIFE CARE CENTER OF CARROLLTON	22973
20201231	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE SUPPLIES	STONEBRIDGE DE SOTO	16968
20201231	OTHER ASSISTANCE PAYMENTS	COVID19LTC MASKS,GOWNS,GLVS	ABERDEEN HEIGHTS	11090.35
20201231	OTHER ASSISTANCE PAYMENTS	COVID19LTC MEDWASTEDISP,PPE	WOODLAND MANOR OF ARNOLD LLC	10368.94
20201231	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE PAY THERMO	COUNTRY VIEW NURSING FACILITY	10357.03
20201231	OTHER ASSISTANCE PAYMENTS	COVID19LTCGOWN,GLOVES,WIPES	ROLLA PRESBYTERIAN MANOR	9000.07
20201231	OTHER ASSISTANCE PAYMENTS	COVID19LTCAIRCLEANER,O2,PPE	SILVERSTONE SNF LLC	8464.33
20201231	OTHER ASSISTANCE PAYMENTS	COVID19 LTC PPE PAY SUPPLY	CLARU DEVILLE NURSING & REHAB	7961.57
20201231	OTHER ASSISTANCE PAYMENTS	COVID19LTC MASKS,GOWNS,GLVS	SILVERSTONE SNF LLC	937.42
20201231	OTHER ASSISTANCE PAYMENTS	COVID19LTC OXYGEN TUBE,GLVS	MARYMOUNT MANOR LLC	225.59
20201231	OTHER LABORATORY & MEDICAL SUPPLIES	COVID-19/GLOVES	SIMMCO DISTRIBUTION LLC	4000
Total Cost:				122941819.2

# Exhibit

17





AUGUST 2021

# THE ORIGINS OF COVID-19:

AN INVESTIGATION OF THE  
WUHAN INSTITUTE OF  
VIROLOGY

HOUSE FOREIGN AFFAIRS COMMITTEE  
REPORT MINORITY STAFF

LEAD REPUBLICAN MICHAEL T. MCCAUL

ONE HUNDRED SEVENTEENTH CONGRESS





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# INTRODUCTION

Five hundred and four days ago, on March 16, 2020, Committee Minority Staff began its investigation into the origins of SARS-CoV-2 and the COVID-19 global pandemic at the direction of Ranking Member Michael T. McCaul. The House Foreign Affairs Committee Minority Staff Final Report on The Origins of the COVID-19 Global Pandemic, Including the Roles of the Chinese Communist Party and the World Health Organization was published in late September 2020. At the time of its release, there were an estimated 30.8 million cases of COVID-19 around the world, and a death toll of approximately 958,000. Today, the cumulative count stands at more than 196.4 million cases and 4,194,061 dead.

The House Foreign Affairs Committee Minority Staff has continued to investigate the origins of COVID-19, examining new information as it became available, including through expert testimony. We have done so because approximately 48 million of our population are under the age of 12 and without access to a vaccination, while others remain unvaccinated due to underlying medical conditions, leaving a large portion of American citizens at risk of infection. We prepared this addendum as reports increase regarding various strains around the globe, and as PRC authorities continue to withhold critical information about the early months of the pandemic. We have strongly urged our Majority colleagues to take this investigation seriously and conduct a full bipartisan investigation into the origins of COVID-19, and will continue to do so. President Biden has said he wants to discover how the pandemic began, and it is our duty to the American people to use all the tools in our arsenal in pursuit of that goal. As always, we stand ready to address this and other foreign policy challenges together and in a bipartisan manner. We must not let up on pressing General Secretary Xi and CCP authorities for answers.

Here we share the result of these efforts in an addendum to our September 2020 Final Report. In particular, this update focuses on whether the virus may have leaked from a medical research laboratory in Wuhan, Hubei Province, PRC, and the efforts to conceal such a leak. The evidence used to inform this report is based upon open source information and includes published academic work, official PRC publications (both public and confidential), interviews, emails, and social media postings.

Since the publication of the September 21, 2020 Final Report new questions have been raised pertaining to the origins of COVID-19. The PRC's continued lack of transparency resulted in President Joseph R. Biden, Jr.'s May 26, 2021, order to the United States Intelligence Community to prepare a report in 90 days on the origins of COVID-19, "including whether it emerged from human contact with an infected animal or from a laboratory accident."<sup>1</sup>

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<sup>1</sup>"Statement by President Joe Biden on the Investigation into the Origins of COVID-19." The White House, 26 May 2021, [www.whitehouse.gov/briefing-room/statements-releases/2021/05/26/statement-by-president-joe-biden-on-the-investigation-into-the-origins-of-covid-19/](https://www.whitehouse.gov/briefing-room/statements-releases/2021/05/26/statement-by-president-joe-biden-on-the-investigation-into-the-origins-of-covid-19/).

# INTRODUCTION

Based on the material collected and analyzed by the Committee Minority Staff, the preponderance of evidence suggests SARS-CoV-2 was accidentally released from a Wuhan Institute of Virology laboratory sometime prior to September 12, 2019. The virus, or the viral sequence that was genetically manipulated, was likely collected in a cave in Yunnan province, PRC, between 2012 and 2015. Researchers at the WIV, officials within the CCP, and potentially American citizens directly engaged in efforts to obfuscate information related to the origins of the virus and to suppress public debate of a possible lab leak. It is incumbent on these parties to respond to the issues raised herein and provide clarity and any exonerating evidence as soon as possible. Until that time, it must be assumed General Secretary Xi and the Chinese Communist Party, prioritizes preserving the Party over the lives of its own people and those around the global suffering the effects of the COVID-19 pandemic.

# EXECUTIVE SUMMARY

More than one year after the World Health Organization declared a pandemic, the world is still reeling from the emergence of the SARS-CoV-2 virus and the disease it causes, COVID-19. More than four million people have lost their lives worldwide, including more than 612,000 Americans, while economies around the world have been devastated by the fallout. This report investigates the origin of this virus and looks at how it became a deadly pandemic.

## The Wuhan Institute of Virology

Last September, the House Foreign Affairs Committee Minority Staff, under the direction of Ranking Member Michael T. McCaul, released a report on the origins of the COVID-19 pandemic. That report highlighted the possibility SARS-CoV-2 could have leaked from the Wuhan Institute of Virology (WIV). However, as we continued our investigation and uncovered more information, we now believe it's time to completely dismiss the wet market as the source of the outbreak. We also believe the preponderance of the evidence proves the virus did leak from the WIV and that it did so sometime before September 12, 2019.

This is based upon multiple pieces of evidence laid out in the report, including:

- The sudden removal of the WIV's virus and sample database in the middle of the night on September 12, 2019 and without explanation;
- Safety concerns expressed by top PRC scientists in 2019 and unusually scheduled maintenance at the WIV;
- Athletes at the Military World Games held in Wuhan in October 2019 who became sick with symptoms similar to COVID-19 both while in Wuhan and also shortly after returning to their home countries;
- Satellite imagery of Wuhan in September and October 2019 that showed a significant uptick in the number of people at local hospitals surrounding the WIV's headquarters, coupled with an unusually high number of patients with symptoms similar to COVID-19;
- The installation of a People's Liberation Army's bioweapons expert as the head of the WIV's Biosafety Level 4 lab (BSL-4), possibly as early as late 2019; and
- Actions by the Chinese Communist Party and scientists working at or affiliated with the WIV to hide or coverup the type of research being conducted at there.



# EXECUTIVE SUMMARY

## Genetic Modification

This report also lays out ample evidence that researchers at the WIV, in conjunction with U.S. scientists and funded by both the PRC government and the U.S. government, were conducting gain-of-function research on coronaviruses at the WIV, at times under BSL-2 conditions. Much of this research was focused on modifying the spike protein of coronaviruses that could not infect humans so they could bind to human immune systems. The stated purpose of this work was to identify viruses with pandemic potential and to create a broad-spectrum coronavirus vaccine. In many instances, the scientists were successful in creating “chimeric viruses” – or viruses created from the pieces of other viruses – that could infect human immune systems. With dangerous research like this conducted at safety levels similar to a dentist’s office, a natural or genetically modified virus could have easily escaped the lab and infected the community.

Committee Minority Staff has also identified scientists who are directly tied to the WIV, and who worked on gain-of-function research in the years prior to the start of the current pandemic, who had the ability to genetically modify coronaviruses without leaving any trace evidence. An American scientist, Dr. Ralph Baric, assisted in creating a method to leave no trace of genetic modification as early as 2005. And as early as 2016, scientists working at the WIV were able to do the same. This makes it clear that claims by the scientific community that SARS-CoV-2 could not be man-made because it has no genetic modification markers are disingenuous.

We conclude there is ample proof that the virus could have been genetically manipulated, and that it is vitally important we fully investigate this hypothesis to determine if that happened here.

## The Cover-Up

In the original report, we laid out many of the ways the Chinese Communist Party (CCP) and the World Health Organization (WHO) went to great lengths to cover up the initial epidemic, and how their cover-up likely turned what could have been a local outbreak into a global pandemic. The CCP detained doctors in order to silence them, and disappeared journalists who attempted to expose the truth. They destroyed lab samples, and hid the fact there was clear evidence of human-to-human transmission. And they still refuse to allow a real investigation into the origins. At the same time, the WHO, under Director General Tedros, failed to warn the world of the impending pandemic. Instead, he parroted CCP talking points, acting as a puppet of General Secretary Xi.

In this addendum, we have uncovered further evidence of how top scientists at the WIV and Dr. Peter Daszak, an American scientist, furthered that cover-up. Their actions include bullying other scientists who questioned whether the virus could have leaked from a lab; misleading the world about how a virus can be modified without leaving a trace; and, in many, instances directly lying about the nature of the research they were conducting, as well as the low-level safety protocols they were using for that research.

These actions not only delayed an initial investigation into the possibility of a lab leak costing valuable time, but provide further proof the virus likely leaked from the WIV. These actions also call into question the way in which U.S. government grants are used in overseas labs and call for more oversight of those grants.



# EXECUTIVE SUMMARY

## Next Steps

After this extensive investigation, we believe it is time to call Peter Daszak to testify before Congress. There are still many outstanding questions about the type of research he funded at the WIV that only he can answer. In addition, we believe there is legislation Congress can pass that would not only hold those responsible accountable but also help to prevent a future pandemic, including but not limited to:

- Institute a ban on conducting and funding any work that includes gain-of-function research until an international and legally binding standard is set, and only where that standard is verifiably being followed.
- Sanction the Chinese Academy of Sciences and affiliated entities.
- List the Wuhan Institute of Virology and its leadership on the Specially Designated Nationals and Blocked Persons List and apply additional, appropriate secondary sanctions.
- Authorize new sanctions for academic, governmental, and military bioresearch facilities that fail to ensure the appropriate levels of safety and information sharing.

# GLOSSARY OF TERMS

Gain-of-Function Research	“Research that improves the ability of a pathogen to cause disease.” – U.S. Department of Health and Human Services
Spike Protein	A protein structure on the surface of an enveloped virus responsible for anchoring the virus to the host cell’s surface and enabling the injection of the virus’ genetic material into the host cell.
RBD	Receptor-Binding Domain. The specific short fragment in a spike protein of a virus that binds the virus to a specific receptor on the host cell.
Primary Author	The first listed author of an academic paper, usually the person who contributes the most to a paper.
Corresponding Author	The point of contact for editors and outside readers who have questions about an academic paper.
USAID Predict	An epidemiological research grant program funded by the United States Agency for International Development. PREDICT provided funding for biological sampling aimed at virus identification and collection. The program provided grant funding to EcoHealth Alliance.
SARS	Severe Acute Respiratory Syndrome. A viral respiratory disease caused by SARS-CoV, a betacoronavirus. First identified as the cause of a 2002-2003 epidemic.
MERS	Middle East Respiratory Syndrome. A viral respiratory disease caused by MERS-CoV, a betacoronavirus. First identified as the cause of a 2012 outbreak.
SARS-CoV-2	The betacoronavirus that causes COVID-19.
Coronavirus	An RNA virus that causes disease in mammals and birds. Range in severity from the common cold to SARS-CoV-2.
Betacoronavirus	One of the four subclassifications of coronaviruses. Found in bats and rodents, this is the genus includes SARS, MERS, and SARS-CoV-2.
Biosafety Level 1 (BSL1)	Designed for work on microbes not known to cause disease in healthy adults and present minimal potential hazard to laboratorians and the environment. Work can be performed on an open lab bench or table.

# GLOSSARY OF TERMS

Biosafety Level 2 (BSL2)	For work with microbes that pose moderate hazards to laboratorians and the environment. The microbes are typically indigenous and associated with diseases of varying severity. Personal protective equipment includes lab coats and gloves. Work can be performed in the open or in a biological safety cabinet. Commonly compared to the level of safety observed in a dentist's office.
Bio Safety Level 3 (BSL3)	For work with microbes that are either indigenous or exotic, and that can cause serious or potentially lethal disease through respiratory transmission. Respiratory transmission is the inhalation route of exposure. Researchers should be under medical surveillance and potentially immunized for the microbes they work with. Respirators may be required, in addition to standard personal protective equipment. Work must be performed within a biological safety cabinet. Exhaust air cannot be recirculated, and the laboratory must have sustained directional airflow by drawing air into the laboratory from clean areas towards potentially contaminated areas.
Biosafety Level 4 (BSL4)	This is the highest level of biological safety. The microbes in a BSL-4 lab are dangerous and exotic, posing a high risk of aerosol-transmitted infections. Infections caused by these microbes are frequently fatal and without treatment or vaccines. Researchers must change clothing prior to entering the lab, shower upon exiting, and decontaminate all materials before exiting. All work with microbes must be performed in a Class III biological safety cabinet or while wearing a full body, air-supplied, positive pressure suit. The lab must be in a separate building or in a restricted zone, and must have a dedicated supply and exhaust air, as well as vacuum lines and decontamination systems.
Wuhan Institute of Virology (WIV)	A research institute in Wuhan, PRC focused on focused on virology, that consists of at least two facilities – the Wuhan National Biosafety Laboratory and the Wuhan Institute of Virology Headquarters.”

# GLOSSARY OF TERMS

Wuhan National Biosafety Laboratory	The WIV's new campus, located in the Zhengdian Scientific Park in Jiangxia District, Wuhan. The location of the WIV's Biosafety Level 4 laboratory space.
WIV Headquarters	The older WIV facility, located in Wuchang District, Wuhan near the Wuhan Branch of the Chinese Academies of Science.
Chinese Academy of Sciences	The national academy for natural sciences in the PRC. Reports to the State Council of the People's Republic of China.
WIV1	The first novel coronavirus isolated by WIV researchers. Isolated from bat fecal samples in 2013. A SARS like coronavirus.
WIV16	The second coronavirus isolated by WIV researchers. Isolated from a single bat fecal sample in 2016. A SARS like coronavirus.
Rs4874	The third coronavirus isolated by WIV researchers. Isolated from a single bat fecal sample in 2017. A SARS like coronavirus.
ID4491/RaTG13	A SARS like coronavirus collected in 2013 in a mining cave. 96.1% similar to SARS-CoV-2.
ACE2	Angiotensin-converting enzyme-2, found on the surface of certain cells in a variety of animals, including humans, mice, and civets. The entry point for coronaviruses.
hACE2	The human version of ACE2. Primarily found on the surface of cells and tissues throughout the human body, including the nose, mouth, and lungs. In the lungs, hACE2 is highly abundant on type 2 pneumocytes, an important cell type present in chambers within the lung called alveoli, where oxygen is absorbed, and waste carbon dioxide is released. The primary entry point for SARS-CoV-2 into human cells.
Chimeric Virus	An artificial, man-made virus. Created by joining two or more viral fragments.
Natural Virus	A virus found in nature; "wild type."

# GLOSSARY OF TERMS

Reverse Genetics System	A method in molecular genetics that is used to help understand the function(s) of a gene by analyzing the phenotypic effects caused by genetically engineering specific nucleic acid sequences within the gene. Can be used to create chimeric viruses indistinguishable from natural viruses.
Furin Cleavage Site	An enzyme in the spike protein of SARS-CoV-2 that increases how infectious the virus is in humans. SARS-CoV-2 is the only betacoronavirus to have this structure.
Phylogenetic Analysis	The study of the evolutionary development of a species or a group of organisms or a particular characteristic of an organism. Used to identify the relationship between different viruses in the same family.
CGG Double Codon	“CGG-CGG.” This group of six nucleotides (a group of three nucleotides is also known as a codon) is half of the 12 nucleotides that create the furin cleavage site. The CGG double codon is relatively rare in coronaviruses, and SARS-CoV-2 is the only coronavirus in its family to have one.



# KEY PEOPLE

Dr. Wang Yanyi	Director General of the Wuhan Institute of Virology.
Dr. Yuan Zhiming	Director of the WNBL BSL-4 lab. General Secretary of the Chinese Communist Party Committee within the Wuhan Branch of the Chinese Academy of Sciences, to which the WIV belongs.
Dr. Shi Zheng-li	Senior scientist at the Wuhan Institute of Virology (WIV). Serves as Director, Research Center for Emerging Infectious Diseases; Director, Chinese Academy of Sciences Key Laboratory of Special Pathogens; Director, Biosafety Working Committee; and Deputy Director of the Wuhan National Biosafety Laboratory's Biosafety-Level 4 lab.
Dr. Ben Hu	WIV researcher and former doctoral student of Shi Zheng-li. Deeply involved in the WIV's coronavirus research.
Dr. Linfa Wang	PRC national, Director and Professor of the Program in Emerging Infectious Diseases at the Duke-NUS Graduate Medical School in Singapore. Chair of the Scientific Advisory Board for the Center for Emerging Diseases at the WIV.
Dr. Peter Daszak	CEO of EcoHealth Alliance. Longtime collaborator of Shi and others at the WIV. Provided subgrants to the WIV to help fund coronavirus research.
Dr. Ralph Baric	Researcher at the University of North Carolina at Chapel Hill who has collaborated with Shi and other WIV researchers on coronavirus research.

# ADDENDUM TO THE REPORT

## I. THE CITY OF WUHAN: EPICENTER OF A PANDEMIC

Wuhan is the epicenter of the coronavirus pandemic. Located in central PRC where the Yangtze River, the PRC's longest river, and the Han River meet, Wuhan is the capital city of Hubei Province and boasts a population of about 11.1 million in about 3,280 square miles.<sup>2</sup> It is home to the PRC's tallest skyscrapers, multiple colleges and universities, including the prominent Wuhan University, major historical and cultural sites, and an influential research laboratory, the Wuhan Institute of Virology (WIV). To put the scale of Wuhan in perspective, the city covers an area five times the size of Houston and has a larger population than New York City and Chicago combined.

Wuhan is home to the Hankou railway station, central PRC's biggest European-style Railway station, and two other major train stations. Hankou Station connects directly to the Tianhe International Airport, the busiest airport in central PRC and the geographic center of the PRC's airport network. From the Tianhe airport, travelers can fly direct to New York City, San Francisco, Paris, Milan, Rome, Hamburg, Bangkok, Tokyo, Seoul, and Dubai, among many other destinations around the world.

The PRC calls Wuhan one of its nine "National Central Cities," an official state label that means it leads the way, along with the capital Beijing, Shanghai, and other major cities, in developing culture, politics, and the economy.<sup>3</sup> An August 2016 report by the Netherlands Enterprise Agency, a government agency that operates under the auspices of the Ministry of Economic Affairs and Climate Policy, identified Wuhan as a major hub not just within the PRC, but also globally within the Chinese "One Belt One Road" initiative due to its accessibility.<sup>4</sup> The city is also home to significant railway commerce. A 2018 report from Xinhua news expected an estimated 500 freight trains from Wuhan to Europe for the export of goods.<sup>5</sup>

France, the U.S., the Republic of Korea, and the UK maintain Consulates in the city, which was selected to host the 7th International Military Sports Council (CISM) Military World Games. During the games, more than 9,000 military personnel from over 100 countries stayed in Wuhan in accommodations at an athletes' village built specifically for the games.

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2 "WHO-convened Global Study of Origins of SARS-CoV-2: China Part." Joint WHO-China Study. 30 March 2021, <https://www.who.int/health-topics/coronavirus/origins-of-the-virus>

3 Xu, Zongwei. "China Unveils National Central City Strategy." *China Watch*, 29 Mar. 2018, [www.chinawatch.cn/a/201803/29/WS5ad061d6a310cc9200067c6c.html](http://www.chinawatch.cn/a/201803/29/WS5ad061d6a310cc9200067c6c.html).

4 Van de Bovenkamp, Judith and Yuan Fei. "Economic Overview of Hubei Province." *Netherlands Business Support Office Wuhan*, Aug. 2016, <https://www.rvo.nl/sites/default/files/2016/08/Economic-overview-Hubei-province-China.pdf>

5 "Central China-Europe Rail Freight to Surge in 2018." *Xinhua*, 1 Feb. 2018. [http://www.china.org.cn/china/Off\\_the\\_Wire/2018-02/01/content\\_50372222.htm](http://www.china.org.cn/china/Off_the_Wire/2018-02/01/content_50372222.htm)

## II. EVIDENCE OF A LAB LEAK

As discussed in the previously issued report, the WIV continues to be a focal point of debate concerning the origins of SARS-CoV-2 and the COVID-19 pandemic. In recent months, new information about the WIV has come to light, enabling us to better understand the institute, the type of research conducted by scientists working there, and its ties to the CCP and their military, the People's Liberation Army (PLA). We now believe the preponderance of evidence shows the virus accidentally leaked from one of the WIV's facilities.

### The Wuhan Institute of Virology

The WIV was founded in 1956 as the Wuhan Microbiology Laboratory and has operated under the administration of the Chinese Academy of Sciences since 1978.<sup>6</sup> The institute currently occupies at least two campuses – the much-discussed Wuhan National Biosafety Laboratory (WNBL) in Zhengdian Scientific Park (see Figure 1), and the older facility (hereafter WIV Headquarters) located in the Xiaohongshan park in the Wuchang District of Wuhan (see Figure 2). The WNBL is a large complex with multiple buildings that house 20 Biosafety Level II (BSL-2) laboratories, two Biosafety Level III (BSL-3) laboratories, and 3000 square meters of Biosafety Level IV (BSL-4) space, “including four independent laboratories areas and two animal suites.”<sup>7</sup> Construction was completed in 2015, but due to delays the BSL-4 space did not become operational until early 2018.<sup>8</sup>



Fig. 1: Wuhan National Biosafety Laboratory (WNBL)

Missing from the majority of public debates regarding the WIV is the research conducted at the WIV Headquarters, the older location in the Wuchang District of Wuhan. Located 12 miles northeast of the WNBL, in the Wuchang District, this facility remains the administrative headquarters of the WIV. In addition to the BSL-2 labs at this location, the WIV constructed a BSL-3 laboratory at the facility in 2003.<sup>9</sup>

<sup>6</sup> “History.” *Wuhan Institute of Virology*, [http://english.whiov.cas.cn/About\\_Us2016/History2016/](http://english.whiov.cas.cn/About_Us2016/History2016/).

<sup>7</sup> World Health Organization. “WHO Consultative Meeting on High/Maximum Containment (Biosafety Level 4) Laboratories Networking.” Meeting Report, Lyon, France, 13-15 Dec. 2018, <https://apps.who.int/iris/bitstream/handle/10665/311625/WHO-WHE-CPI-2018.40-eng.pdf>

<sup>8</sup> Zhiming, Yuan. “Current status and future challenges of high-level biosafety laboratories in China.” *Journal of Biosafety and Biosecurity*, 1 Sept. 2019, 1(2): 123-127. <https://doi.org/10.1016/j.jobbb.2019.09.005>

<sup>9</sup> Zheng Qianli, “Jiang Xia plays new essays and plays Yoko on the crane——The construction and research team of P4 laboratory of Wuhan Institute of Virology, Chinese Academy of Sciences.” *Chinese Journal of Science*, 1 Jan. 2018, <https://archive.is/V3GHk#selection-517.35-517.202>

It was here, in the center of Wuhan, that Dr. Shi Zheng-li and her team conducted gain-of-function research on coronaviruses in the years leading up to the COVID-19 pandemic.



*Fig. 2: WIV Headquarters in Wuchang*

According to the WIV's website, Shi Zheng-li serves as the Director of the WIV's Research Center for Emerging Infectious Diseases, the Deputy Director of the WNBL BSL-4 lab, the Director of the BSL-3 lab, and the Director of the Biosafety Working Committee.<sup>10</sup> Shi is also the Director of the Chinese Academy of Sciences (CAS) Key Laboratory of Special Pathogens and Biosafety,<sup>11</sup> which includes the majority of scientists who are conducting gain-of-function research on coronaviruses at the WIV.

It should be noted that the WIV has a Chinese Communist Party Committee within the institute, as well as a Commission for Discipline Inspection. The Party Committee is divided into four party branches, which are then divided into subbranches organized around the individual WIV departments, research centers, and offices. Each subbranch has its own Propaganda Committee. Committee Minority Staff were able to identify eight WIV researchers on these committees, including several who are affiliated with the Key Laboratory that Shi directs.

WIV Researcher	Lab Affiliation	Propaganda Committee <sup>12</sup>
Liu Qiaojiue	Key Laboratory of Special Pathogens and Biosafety <sup>13</sup>	Party Branch of Research Center for Emerging Infectious Diseases
Zhang Xiaowei	Key Laboratory of Special Pathogens and Biosafety and Key Laboratory of Virology <sup>14</sup>	Party Branch of the Research Center for Microbiology and Nanobiology

<sup>10</sup> "Shi Zhingli." Wuhan Institute of Virology, [http://www.whiov.cas.cn/sourcedb\\_whiov\\_cas/zw/rck/200907/t20090718\\_2100074.html](http://www.whiov.cas.cn/sourcedb_whiov_cas/zw/rck/200907/t20090718_2100074.html)

<sup>11</sup> "Prof. SHI Zhengli elected a fellow of the American Academy of Microbiology." *Wuhan Institute of Virology*, [http://english.whiov.cas.cn/ne/201903/t20190308\\_206697.html](http://english.whiov.cas.cn/ne/201903/t20190308_206697.html)

<sup>12</sup> "Party Branch." Wuhan Institute of Virology, <http://www.whiov.cas.cn/djxwh/dqzz/dzb/>

<sup>13</sup> Wang Q, et. al. "Structural Basis for RNA Replication by the SARS-CoV-2 Polymerase." *Cell*, 23 July 2020, 182(2):417-428.e13, <https://pubmed.ncbi.nlm.nih.gov/32526208/>

<sup>14</sup> Zhang, Xiaowei et al. "Tick-borne encephalitis virus induces chemokine RANTES expression via activation of IRF-3 pathway." *Journal of Neuroinflammation*, 30 Aug. 2016, 13(1):209. <https://pubmed.ncbi.nlm.nih.gov/27576490/>



Shen Xurui	Key Laboratory of Special Pathogens and Biosafety <sup>15</sup>	Graduate Party Branch of the Research Center for Emerging Infectious Diseases
Tang Shuang	State Key Laboratory of Virology <sup>16</sup>	Party Branch of the Research Center for Microbial Resources and Bioinformatics
Wu Yan	State Key Laboratory of Virology <sup>17</sup>	Party Branch of Molecular Virus and Pathology Research Center
He Lihong	State Key Laboratory of Virology <sup>18</sup>	Party Branch of the Research Center for Microbial Resources and Bioinformatics
Wang Qingxing	State Key Laboratory of Virology <sup>19</sup>	Graduate Party Branch of the Research Center for Molecular Viruses and Pathology
Yang Mengsi	State Key Laboratory of Virology <sup>20</sup>	Graduate Party Branch of the Research Center of Microbiology and Nanobiology

Table 1: WIV Researchers on CCP Propaganda Committees

The Committee for Discipline Inspection is charged with “the implementation of the party's line, policy, party discipline, relevant laws and regulations, and the institute's rules and regulations.”<sup>21</sup>

In addition to the researchers serving on propaganda committees, other key figures at the WIV also serve as CCP officials. Dr. Wang Yanyi serves as the Director of the WIV and joined the China Zhi Gong Party, a CCP controlled minority party, in 2010. In 2018, the same year she became the Director General of the WIV, she was elected the Deputy Director of the Wuhan Municipal Party Committee.

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- 15 Zhou, Peng et al. “A pneumonia outbreak associated with a new coronavirus of probable bat origin.” *Nature* March 2020, 579(7798): 270-273. <https://pubmed.ncbi.nlm.nih.gov/32015507/>
- 16 Abudurexiti, Abulikemu, et al. “Taxonomy of the order Bunyavirales: update 2019.” *Archives of Virology*, July 2019, 164(7): 1949-1965. <https://pubmed.ncbi.nlm.nih.gov/31065850/>
- 17 Su, Hai-Xia et al. “Anti-SARS-CoV-2 activities in vitro of Shuanghuanglian preparations and bioactive ingredients.” *Acta Pharmacologica Sinica*, September 2020, 41(9): 1167-1177. <https://pubmed.ncbi.nlm.nih.gov/32737471/>
- 18 Shao, Wei et al. “Functional Characterization of the Group I Alphabaculovirus Specific Gene ac73.” *Virologica Sinica*, Dec. 2019, 34(6): 701-711. <https://pubmed.ncbi.nlm.nih.gov/31317397/>
- 19 Su, Haixia et al. “Identification of pyrogallol as a warhead in design of covalent inhibitors for the SARS-CoV-2 3CL protease.” *Nature Communications*, 15 June 2021, (2(1): 3623. <https://pubmed.ncbi.nlm.nih.gov/34131140/>
- 20 Zhang, Juan, et. al. “Passive cancer targeting with a viral nanoparticle depends on the stage of tumorigenesis.” *Nanoscale*, 8 July 2021, 13(26):11334-11342, <https://pubmed.ncbi.nlm.nih.gov/34165123/>
- 21 “Commission for Discipline Inspection.” *Wuhan Institute of Virology*, <http://www.whiov.cas.cn/djkwzh/dqzz/jw/>



Until late 2019, the BSL-4 lab was managed by Dr. Yuan Zhiming. Yuan is the General Secretary of the Chinese Communist Party Committee within the Wuhan Branch of the Chinese Academy of Sciences, to which the WIV belongs. Local CCP leaders not only run the WIV itself but also directly managed the BSL-4 lab.<sup>22</sup>

Director Wang's 2021 New Year's speech makes reference to the Party Committee of Wuhan Institute of Virology, pledging that the party committee will "effectively play the role of a battle fortress of grassroots party organizations."<sup>23</sup> The WNBL also has its own party branch, the Zhengdian Laboratory Party Branch, which was "awarded the title of 'Red Flag Party Branch' by the Hubei Provincial Party Committee and Provincial Organization Working Committee, effectively playing an advanced and exemplary role."<sup>24</sup> Notably, in discussing the COVID-19 pandemic, Director Wang's 2021 speech takes pains to address questions of lab safety – "The institute's high-level biosafety laboratory operates safely for more than 300 days throughout the year."<sup>25</sup> Her 2020 address, posted sometime after April 2020, makes no such mention.

The WNBL's BSL-4 lab was constructed as a result of an agreement between the PRC and France that was signed after the 2003 SARS pandemic.<sup>26</sup> At the time, all BSL-3 labs in the PRC were controlled by the PRC's People's Liberation Army (PLA). Then-President of France, Jacques Chirac, and his Prime Minister, Jean-Pierre Raffarin, approved the project despite concerns from both the French Ministry of Defense and French intelligence services – Raffarin himself described it as "a political agreement."<sup>27</sup> The PRC was suspected of having a biological warfare program, and the military and intelligence services were worried that the dual-use technology required to build a BSL-4 lab could be misused by the PRC government. The uneasy compromise reached within the French government was that the agreement would require joint PRC-France research to be conducted in the lab, with French researchers present.<sup>28</sup>

In 2016, the PRC requested dozens of the containment suits required to work in the lab. The French Dual-Use Commission, tasked with considering exports of sensitive equipment, rejected their request. According to French reporting, the request was "well above the needs of the Wuhan [lab]."<sup>29</sup> **This continued to fuel concerns within the French Ministry of Defense that the PRC was seeking to engage in military research or open a second BSL-4 lab for military means.** Despite the agreement that the BSL-4 lab would be a site of joint research, and an announcement at the 2017 inauguration by then Prime Minister Bernard Cazeneuve of €5 million in funding, there has only been one French scientist assigned to the lab. His tour ended in 2020.<sup>30</sup>

22 Izambard, Antoine. "L'histoire Secrète Du Laboratoire P4 De Wuhan Vendu Par La France à La Chine." *Challenges*, 30 Apr. 2020 [www.challenges.fr/entreprise/sante-et-pharmacie/revelations-l-histoire-secrete-du-laboratoire-p4-de-wuhan-vendu-par-la-france-a-la-chine\\_707425](http://www.challenges.fr/entreprise/sante-et-pharmacie/revelations-l-histoire-secrete-du-laboratoire-p4-de-wuhan-vendu-par-la-france-a-la-chine_707425).

23 "New Year's Speech by the Director in 2021." *Wuhan Institute of Virology*, [http://www.whiov.cas.cn/gkjj/szzc\\_160220/](http://www.whiov.cas.cn/gkjj/szzc_160220/)

24 "New Year's Message from the Director in 2020." *Wuhan Institute of Virology*, [https://web.archive.org/web/20200701032318/http://www.whiov.cas.cn/gkjj/szzc\\_160220/](https://web.archive.org/web/20200701032318/http://www.whiov.cas.cn/gkjj/szzc_160220/)

25 *Ibid.*

26 "About WIV." *Wuhan Institute of Virology*, [http://english.whiov.cas.cn/About\\_Us2016/Brief\\_Introduction2016/](http://english.whiov.cas.cn/About_Us2016/Brief_Introduction2016/).

27 Izambard, Antoine. "L'histoire Secrète Du Laboratoire P4 De Wuhan Vendu Par La France à La Chine." *Challenges*, 30 Apr. 2020, [www.challenges.fr/entreprise/sante-et-pharmacie/revelations-l-histoire-secrete-du-laboratoire-p4-de-wuhan-vendu-par-la-france-a-la-chine\\_707425](http://www.challenges.fr/entreprise/sante-et-pharmacie/revelations-l-histoire-secrete-du-laboratoire-p4-de-wuhan-vendu-par-la-france-a-la-chine_707425).

28 *Ibid.*

29 *Ibid.*

30 Izambard.

### Safety Concerns and Unusual Maintenance

There have been several reports of safety concerns at PRC labs starting as early as 2004, when it was discovered SARS leaked from a lab in Beijing. Several other accidental releases have happened in the years since.

As discussed in our original report released last year, in 2018 U.S. State Department officials sent cables to Washington, D.C. highlighting concerns with safety issues at the WIV. The cables reported that scientists at the WIV noted “a serious shortage of appropriately trained technicians and investigators needed to safely operate this high-containment laboratory.”<sup>31</sup> The cables also questioned the PRC’s commitment to prioritizing the important research for which the lab was designed.

(b)(6) Thus, while the BSL-4 lab is ostensibly fully accredited, its utilization is limited by lack of access to specific organisms and by opaque government review and approval processes. As long as this situation continues, Beijing’s commitment to prioritizing infectious disease control - on the regional and international level, especially in relation to highly pathogenic viruses, remains in doubt.

Fig. 4: Excerpt from January 19, 2018 Cable from the U.S. Embassy in Beijing to State Department Headquarters in Washington, D.C.

One year later, in June 2019, George Gao, the Director of the Chinese Center for Disease Control and Prevention, expressed concerns about safety protocols at the WIV. In an almost prophetic statement published in *Biosafety and Health*, Gao wrote (emphasis added):

Advances in biomedical technologies, such as genome editing and synthetic biotechnology, have the potential to provide new avenues for biological intervention in human diseases. These advances may also have a positive impact by allowing us to address risks in new approaches. **However, the proliferation of such technologies means they will also be available to the ambitious, careless, inept, and outright malcontents, who may misuse them in ways that endanger our safety.** For example, while CRISPR-related techniques provide revolutionary solutions for targeted cellular genome editing, it can also lead to unexpected off-target mutations within genomes or the possibility of gene drive initiation in humans, animals, insects, and plants. Similarly, genetic modification of pathogens, which may expand host range as well as increase transmission and virulence, may result in new risks for epidemics. For example, in 2013, several groups showed that influenza H5N1 viruses with a few nucleotide mutations and H7N9 isolates reasserted with 2009 pandemic H1N1 virus could have the ability for airborne transmission between ferrets. **Likewise, synthetic bat-origin SARS-like coronaviruses acquired an increased capability to infect human cells. Thus, modifying the genomes of animals (including humans), plants, and microbes (including pathogens) must be highly regulated.**<sup>32</sup>

Three months later, in September 2019, Yuan Zhiming, the Director of the BSL-4 lab at the WNBL and Shi’s superior, published an article in the *Journal of Biosafety and Biosecurity*.

<sup>31</sup> Rogin, Josh. “Opinion | State Department Cables Warned of Safety Issues at Wuhan Lab Studying Bat Coronaviruses.” *The Washington Post*, 14 Apr. 2020, [www.washingtonpost.com/opinions/2020/04/14/state-department-cables-warned-safety-issues-wuhan-lab-studying-bat-coronaviruses/](https://www.washingtonpost.com/opinions/2020/04/14/state-department-cables-warned-safety-issues-wuhan-lab-studying-bat-coronaviruses/).

<sup>32</sup> Gao, George F. “For a better world: Biosafety strategies to protect global health.” *Biosafety and Health*, June 2019, 1(1): 1-3. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7147920/>

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Entitled, “Current status and future challenges of high-level biosafety laboratories in China,” the article discusses at length the construction of the WNBL. Yuan identifies multiple key issues, including inadequate biosafety management systems, insufficient resources for efficient laboratory operation, and deficiency of professional capacity. With a surprising level of transparency, Yuan admits that the enforcement of pathogen, waste, and laboratory animal management regulations “needs to be strengthened.”<sup>34</sup> Discussing the insufficient level of resources being provided by the PRC government, he stated:

**The maintenance cost is generally neglected; several high-level BSLs have insufficient operational funds for routine yet vital processes. Due to the limited resources, some BSL-3 laboratories run on extremely minimal operational costs or in some cases none at all.**<sup>35</sup>

Yuan also raised concerns about a lack of specialized biosafety managers and engineers to run the labs.<sup>36</sup> **It is important to note that researchers at the WIV had previously conducted gain-of-function research on coronaviruses at the BSL-2 and BSL-3 levels. This is important given that both the head of the China CDC and the head of the WIV’s BSL-4 labs had expressed concern about the safety of this research and the labs in which it was being conducted.**

Interestingly, there appears to have been ongoing maintenance and repairs projects occurring at the WIV in 2019, before Yuan published his article raising these concerns. It is important to note that at the time of the hazardous waste treatment system renovation project, the WNBL had been operational for less than two years. Such a significant renovation so soon after the facility began operation appears unusual. Procurement announcements published on the PRC’s government procurement website provide evidence of ongoing work at what appears to be both WIV locations.

Project Name	Location	Date	Budget (USD)
Maintenance Project of P3 Laboratory and Laboratory Animal Center in Zhengdian Park <sup>37</sup>	WNBL	March 1, 2019	\$401,284.10
Procurement of Positive Pressure Protective Clothing <sup>38</sup>	WNBL	March 21, 2019	\$177,161.40
Hazardous Waste Treatment System Renovation Project <sup>39</sup>	WNBL	July 31, 2019	\$1,521,279.28

<sup>33</sup>Yuan Zhinming. “Current status and future challenges of high-level biosafety laboratories in China.” *Journal of Biosafety and Biosecurity*, Sept. 2019, 1(2): 123-127. <https://www.sciencedirect.com/science/article/pii/S2588933819300391#b0080>

<sup>34</sup>*Ibid.*

<sup>35</sup>*Ibid.*

<sup>36</sup>*Ibid.*

<sup>37</sup>“Announcement of Competitive Consultation on Maintenance Project of P3 Laboratory and Laboratory Animal Center in Zhengdian Park, Wuhan Institute of Virology, Chinese Academy of Sciences.” *China Government Procurement Network*, 1 March 2019, <https://archive.is/7eCPU#selection-229.0-229.185>

<sup>38</sup>“Announcement of a single source for the purchase of positive pressure protective clothing project by Wuhan Institute of Virology, Chinese Academy of Sciences.” *China Government Procurement Network*, 21 March 2019, <https://archive.is/VUcNA#selection-229.0-229.157>

<sup>39</sup>“Announcement on the transaction of the hazardous waste treatment system renovation project in Zhengdian Park, Wuhan Institute of Virology, Chinese Academy of Sciences.” *China Government Procurement Network*, 31 July 2019, <https://archive.is/3CW03#selection-229.0-229.166>

Procurement Project of The Environmental Air Disinfection System and The Scalable Automated Sample Storage Management System <sup>40</sup>	Unclear	August 14, 2019	\$132,200,025.47
Security Service Procurement Project <sup>41</sup>	WNBL	September 12, 2019	\$1,281,022.33
Central Air Conditioning Renovation Project <sup>42</sup>	Unclear	September 16, 2019	\$606,382,986.11
Procurement of Air Incinerator and Testing Service <sup>43</sup>	Unclear	December 3, 2019	\$49,388.81

Table 2: WIV Procurement Projects in 2019

**The references to maintenance at the BSL-3 and animal center at the WNBL, the procurement of an environmental air disinfection system, and renovations to the hazardous waste treatment system and central air conditioning system all raise questions about how well these systems were functioning in the months prior to the outbreak of COVID-19.**

### The Disappearing Database

On September 12, 2019 the WIV's online, public database of samples and virus sequences was taken offline in the middle of the night between 2:00AM and 3:00AM local time.<sup>44</sup> The database contained more than 22,000 entries consisting of sample and pathogen data collected from bats and mice. The database contained key information about each sample, including what type of animal it was collected from, where it was collected, whether the virus was successfully isolated, the type of virus collected, and its similarity to other known viruses.

<sup>40</sup>"Announcement of winning the bid for the procurement project of the environmental air disinfection system and the scalable automated sample storage management system of the Wuhan Institute of Virology, Chinese Academy of Sciences." *China Government Procurement Network*, 14 Aug. 2019, <https://archive.is/1nXLD#selection-229.0-229.228>

<sup>41</sup>"Competitive consultation on the procurement project of security services in Zhengdian Science Park, Wuhan Institute of Virology, Chinese Academy of Sciences." *China Government Procurement Network*, 12 Sept. 2019, <https://archive.is/tUi75#selection-229.0-229.156>

<sup>42</sup>"Competitive Consultation on Central Air Conditioning Renovation Project of Wuhan Institute of Virology, Chinese Academy of Sciences." *China Government Procurement Network*, 16 Sept. 2019, <https://archive.is/bfoTD#selection-229.0-229.131>

<sup>43</sup>"The Wuhan Institute of Virology of the Chinese Academy of Sciences plans to use a single-source procurement method to publicize the procurement of air incineration devices and test service projects." *China Government Procurement Network*, 3 Dec. 2019, <https://archive.is/Jifqr#selection-229.0-229.197>

<sup>44</sup>"Status breakdown of the database of characteristic wild animals carrying virus pathogens (September 2019)." *Scientific Database Service Monitoring & Statistics System*, <https://archive.is/AGtFv#selection-1553.0-1567.2>

Table 1. Virus data display of bat samples

Data element name	Example
Sample ID	162387A
Sample tissue type	Anal
Animal type	bat
Source species	<i>Rousettus leschenaultii</i>
Species molecular identification	<i>Rousettus</i> sp.
Collection date	2016-08-21
country	China
province	Yunnan
city	Miaoxin village, Mengna county, Sipsongpanna
GPS information	101.51944,21.78127
Whether high-throughput sequencing	No
Whether the virus is isolated	No
publishing	Luo Y, Li B, Jiang RD, et al. <i>Virus Sin</i> . 2016;33(1):87-95. doi:10.1007/s12250-018-0017-2
Remarks	
Detection method	PCR-based
Virus name	Coronaviridae
Test results	Positive
blast result	btcov HKU9
Virus classification	HKU9
Virus sequence	See references for details
Similarity	94%
Sequence length	398bp
Sequence-encoded gene	Partial RdRp

Fig. 6: Example Database Entry<sup>45</sup>

To date, there has been no consistent answer provided as to why the database was removed or when or if it will be put back online.

Shi is listed as the data correspondence author for the project. When questioned about the database being taken offline, Shi has given several conflicting answers. During a December 2020 interview with *BBC*, Shi said the database was taken offline for “security reasons” after cyberattacks against the work and personal emails of WIV staff. She also insisted that WIV virus sequences were saved in the GenBank database, run by the National Center for Biotechnology Information. Shi stated, “It's completely transparent. We have nothing to hide.”<sup>46</sup>

In a January 26, 2021 email to someone inquiring about the database, however, Shi stated the database was taken down due to cyberattacks “during [the] COVID-19 pandemic.”<sup>47</sup> She also claimed that researchers had “only entered a limit[ed] data in this database” despite it having more than 22,000 entries.

<sup>45</sup> “Database of pathogens of bat and murine viruses.” *Wikisource*, <https://zh.wikisource.org/zh-hant/%E8%9D%99%E8%9D%A0%E6%BA%90%E5%92%8C%E9%BC%A0%E6%BA%90%E7%97%85%E6%AF%92%E7%97%85%E5%8E%9F%E6%95%B0%E6%8D%AE%E5%BA%93>

<sup>46</sup> Sudworth, John. “Covid: Wuhan Scientist Would ‘Welcome’ Visit Probing Lab Leak Theory.” *BBC News*, 21 Dec. 2020, [www.bbc.com/news/world-asia-china-55364445](http://www.bbc.com/news/world-asia-china-55364445).

<sup>47</sup> Cleary, Tommy. “Prof Zheng-Li Shi Replied to Me, to CNRI,中文DOI运维 I Can Only Conclude @PeterDaszak & the Rest of the @WHO Organisation Were given the Same Information Access Ultimatum:No Trust, No Conversation.@SciDiplomacyUSA Has Its Work Cut Out.Data Hostage? Pic.twitter.com/KhiFs42U7j.” *Twitter*, 10 Mar. 2021, [https://twitter.com/tommy\\_cleary/status/1369689088790425602?s=20](https://twitter.com/tommy_cleary/status/1369689088790425602?s=20).



In an apparent contradiction of her <sup>48</sup>*BBC* interview, Shi admitted that “access to the visitors is limited,” but maintains:

**...all our work regarding the different type of bat coronavirus (partial sequences or full-length genome sequences) have been published and the sequence and sample information have been submitted to GenBank.<sup>49</sup>**

At the end of her email, Shi writes, “I’ll not answer any of your questions if your curiosity is based on the conspiracy of ‘man made or lab leak of SARS-CoV-2’ or some non-sense questions based on your suspicion. **No trust, no conversation**”<sup>50</sup> (emphasis added).

### New Leadership and PLA Involvement

The WIV’s website indicates that Yuan Zhiming serves as the Dean of the Wuhan Branch of the Chinese Academy of Sciences and director of the WNBL BSL-4 lab.<sup>51</sup> However, news posted on Weibo Douban, a PRC website, on February 7th, 2020 stated that PLA officials were dispatched to assume control of the response. **The report says PLA Major General Chen Wei, an expert in biology and chemical weapon defenses, was deployed to Wuhan in January 2020 and took control of the WNBL BSL-4 lab.** The posting of this information to Douban is significant given the website’s history of censoring posts critical of the CCP, including censoring words related to the Tiananmen Square Massacre.<sup>54</sup> The post’s survival on a heavily CCP censored site confirms its legitimacy.



<sup>48</sup> Sudworth.

<sup>49</sup> *Ibid.*

<sup>50</sup> *Ibid.*

<sup>51</sup> “Yuan Zhiming,” *Wuhan Institute of Virology*, [http://www.whiov.cas.cn/sourcedb\\_whiov\\_cas/zw/rck/200907/t20090718\\_2100080.html](http://www.whiov.cas.cn/sourcedb_whiov_cas/zw/rck/200907/t20090718_2100080.html)

<sup>52</sup> Gertz, Bill. “Chinese Maj. Gen. Chen Wei TAKES Leading Role in Coronavirus Fight.” *The Washington Times*, 16 Feb. 2020, [www.washingtontimes.com/news/2020/feb/16/chinese-maj-gen-chen-wei-takes-leading-role-in-cor/](http://www.washingtontimes.com/news/2020/feb/16/chinese-maj-gen-chen-wei-takes-leading-role-in-cor/).

<sup>53</sup> Guli. “Major General Chen Wei, China’s Chief Biochemical Weapons Expert, Takes Over Wuhan P4 Virus Laboratory.” *Radio France Internationale*, <https://www.rfi.fr/cn/%E4%B8%AD%E5%9B%BD/20200208-%E4%B8%AD%E5%9B%BD%E9%A6%96%E5%B8%AD%E7%94%9F%E5%8C%96%E6%AD%A6%E5%99%A8%E4%B8%93%E5%AE%B6%E9%99%88%E8%96%87%E5%B0%91%E5%B0%86%E6%8E%A5%E7%AE%A1%E6%AD%A6%E6%B1%89p4%E7%97%85%E6%AF%92%E5%AE%9E%E9%AA%8C%E5%AE%A4>

<sup>54</sup> Honorof, Marshall. “China Marks Tiananmen Massacre with ‘Internet Maintenance Day.’” *NBC News*, 4 June 2013, <https://www.nbcnews.com/id/wbna52096871>

**Committee Minority Staff have also received testimony from a former senior U.S. official that Gen. Chen actually took control of the WNBL BSL-4 lab in late 2019, not January 2020 as was publicly reported.** Gen. Chen taking over part of the WIV demonstrates the CCP was concerned about the activity happening there as news of the virus was spreading. If she took control in 2019, it would mean the CCP knew about the virus earlier, and that the outbreak began earlier – a topic discussed further in this section.

Gen. Chen is a researcher at the Academy of Military Medical Sciences in Beijing, and served as a delegate to the 12th National People's Congress.<sup>55</sup> In January 2018, Gen. Chen was made a member of the 13th National Committee of the Chinese People's Political Consultative Conference (CPPCC). According to the U.S.-China Economic Security Review Commission, the CPPCC is a "critical coordinating body that brings together representatives of China's other interest groups and is led by a member of China's highest-level decision-making authority, the CCP's Politburo Standing Committee."<sup>56</sup>

According to a January 15, 2021 fact sheet published by the State Department, in the years leading up to the pandemic, researchers at the WIV were engaged in classified research, including experiments on animals, on behalf of the PLA.<sup>57</sup> Dr. Shi has repeatedly denied any involvement of the PLA at the WIV. During a lecture hosted only by Rutgers Medical School, Shi stated:

We—our work, our research is open, and we have a lot of international collaboration. And from my knowledge, all our research work is open, is transparency. So, at the beginning of COVID-19, we heard the rumors that it's claimed in our laboratory we have some project, blah blah, with army, blah blah, these kinds of rumors. But this is not correct because I am the lab's director and responsible for research activity. I don't know any kind of research work performed in this lab. This is incorrect information.<sup>58</sup>

This statement is demonstrably false. The WIV had multiple connections to PLA researchers prior to the COVID-19 pandemic; several were listed on the WIV's English language website. The Academic Committee of State Key Laboratory of Virology at the WIV included a Deputy Director from the Second Military Medical University and a member from the 302 Military Hospital of China. The Scientific Advisory Committee for the Center for Emerging Infectious Diseases had among its members a researcher from the Institute of Military Veterinary at the Academy of Military Medical Sciences.<sup>59</sup> This website was scrubbed on May 28, 2020, and the lists of committee members removed. However, archived copies of the website are available online.

<sup>55</sup> "List of Deputies to the Twelfth National People's Congress of the People's Republic of China." *Sohu*, <http://news.sohu.com/20130227/n367313787.shtml>

<sup>56</sup> Bowe, Alexander. "China's Overseas United Front Work: Background and Implications for the United States." *U.S.-China Economic and Security Review Commission*, 24 Aug. 2018, [https://www.uscc.gov/sites/default/files/Research/China%27s%20Overseas%20United%20Front%20Work%20-%20Background%20and%20Implications%20for%20US\\_final\\_0.pdf](https://www.uscc.gov/sites/default/files/Research/China%27s%20Overseas%20United%20Front%20Work%20-%20Background%20and%20Implications%20for%20US_final_0.pdf)

<sup>57</sup> United States, Department of State. "Fact Sheet: Activity at the Wuhan Institute of Virology." 15 Jan. 2021, <https://2017-2021.state.gov/fact-sheet-activity-at-the-wuhan-institute-of-virology/index.html>

<sup>58</sup> Eban, Katherine. "The Lab-Leak Theory: Inside the Fight to Uncover COVID-19's Origins." *Vanity Fair*, 3 June 2021, [www.vanityfair.com/news/2021/06/the-lab-leak-theory-inside-the-fight-to-uncover-covid-19s-origins](http://www.vanityfair.com/news/2021/06/the-lab-leak-theory-inside-the-fight-to-uncover-covid-19s-origins).

<sup>59</sup> "Committees." *Wuhan Institute of Virology*, [http://web.archive.org/web/20200527045823/http://english.whiov.cas.cn/About\\_Us2016/Committees/](http://web.archive.org/web/20200527045823/http://english.whiov.cas.cn/About_Us2016/Committees/)

**Academic Committee of State key laboratory of virology, WIV, CAS**

Director: Zihé RAO, Tsinghua University, China.

Deputy Directors: Hongyang WANG, The Second Military Medical University, China.

Hongbin SHU, Wuhan University, China.

**Members:**

Jianfang GUI, Institute of Hydrobiology, Chinese Academy of Sciences, China.

Fusheng WANG, 302 Military Hospital of China, China.

Hualan CHEN, Harbin Veterinary Research Institute, Chinese Academy of Agricultural Sciences, China.

Zhenghong YUAN, Fudan University, China.

Ningshao XIA, Xiamen University, China.

Linqi ZHANG, Tsinghua University, China.

Musheng ZENG, Sun Yat-sen University, China.

Jianguo WU, Wuhan University, China.

Xinwen CHEN, Wuhan Institute of Virology, Chinese Academy of Sciences, China.

Ke LAN, Wuhan University, China.

Fig. 3: Archived Versions of the WIV Committees Page

This raises the obvious question of why Shi, who served on one of the committees, would lie about military researchers working with the WIV. **Her denial and the scrubbing of the website appear to be obvious attempts to obfuscate the PLA's involvement with the WIV.**

**Geospatial Analysis of Traffic Patterns at Wuhan Hospitals Near the WIV**

Around the time the WIV's virus database went offline, car traffic at hospitals in downtown Wuhan began to increase. Researchers from Boston University School of Public Health, Boston Children's Hospital, and Harvard Medical School used satellite imagery to examine parking lot volume of hospitals in Wuhan for the two and a half years prior to December 2019. They found that five of six hospitals analyzed had the highest relative daily volume of cars in the parking lot in September and October 2019, before the first reported cases of COVID-19.

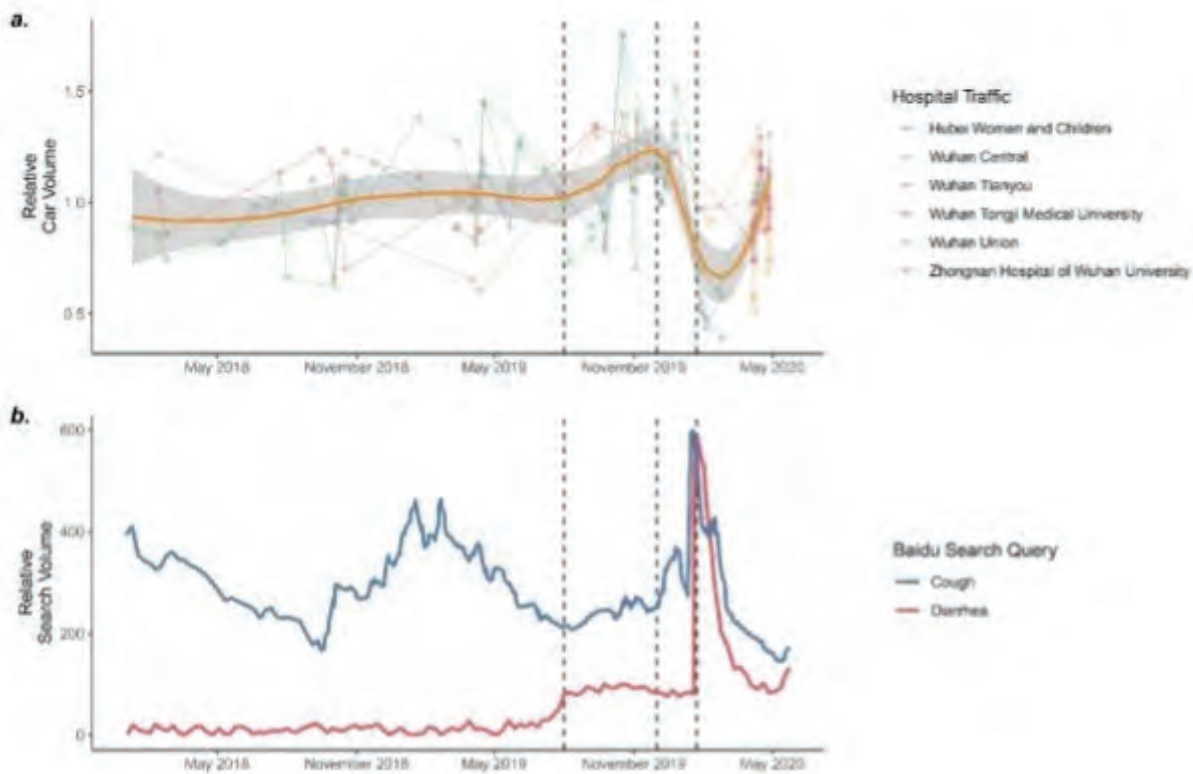


Fig. 7: Time-series of Different Influenza-like Illnesses, Symptoms and Surveillance signal.<sup>62</sup>

This peak corresponded with an increase in searches for “cough” and “diarrhea” in Wuhan on Baidu, a Chinese search engine.<sup>60</sup> According to the CDC, both cough and diarrhea are symptoms of COVID-19.<sup>61</sup> This study suggests a virus with similar symptoms as COVID-19 was circulating in Wuhan in September and October.

### The Initial Outbreak’s Proximity to the WIV

When people get sick, they are likely to seek healthcare near their home or work. Each of the hospitals that saw a rise in traffic with patients complaining of COVID-19 symptoms are located within 6.5 miles of the WIV Headquarters and are connected by public transit lines. The below map shows the location of the WIV Headquarters (in red) and the six hospitals (in blue) which experienced increase vehicle traffic in September and October 2019. When plotted on a map, these six hospitals are clustered around the WIV Headquarters in Wuchang, Wuhan, and are connected to that facility via the Wuhan Metro – various lines are shown in black, yellow, pink, and green on the map. The pink line represents Line 2, whose daily passenger volume exceeded one million trips in 2017.<sup>63</sup>

<sup>60</sup> Nsoesie, Elaine Okanyene, et. al. “Analysis of hospital traffic and search engine data in Wuhan China indicates early disease activity in the Fall of 2019 (2020).” *Digital Access to Scholarship at Harvard*, 2020. <http://nrs.harvard.edu/urn-3:HUL.InstRepos:42669767>

<sup>61</sup> “Symptoms of COVID-19.” *Centers for Disease Control and Prevention*. <https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>

<sup>62</sup> Nsoesie

<sup>63</sup> “Wuhan Metro is bursting with passengers, breaking records for two consecutive days.” 5 April 2017, <https://web.archive.org/web/20170825184909/http://ctjb.cnhubei.com/html/ctjb/20170405/ctjb3089625.html>





Map 1: Harvard Study Hospitals in Relation to the WIV Headquarters

It is also important to note, according to an Australian scientist who worked in the BSL-4 lab, a daily shuttle bus transfers WIV researchers from the Wuhan Branch of the Chinese Academy of Sciences to the WNBL facility and back again.<sup>64</sup> According to public mapping data, the shuttle pick up and drop off point is less than 500 meters from the WIV Headquarters. As such, it is likely that researchers from both the WIV Headquarters, as well as the WNBL, used the Wuhan metro and/or the WNBL shuttle bus, as part of their daily work commute.

**Therefore, it is reasonable to conclude, based on the WIV's extensive sample library and history of genetically manipulating coronaviruses, that in early September, one or more researchers became infected with SARS-CoV-2 in the lab and carried it out into the city. Based on the WIV's publications, researchers could have been exposed while experimenting with a natural virus collected from the wild or infected with a virus they genetically manipulated.** Those researchers likely traveled to and from the WIV via the Wuhan metro or via the shuttle service, providing a vector for the virus to spread. This corresponds with the first signs of a growing wave of ill people in Wuhan centered around the WIV's Wuchang facility.

### The 2019 Military World Games and Sick Athletes

The 7th International Military Sports Council Military World Games (MWGs) opened in Wuhan on October 18, 2019. The games are similar to the Olympic games but consist of military athletes with some added military disciplines. The MWGs in Wuhan drew 9,308 athletes, representing 109 countries, to compete in 329 events across 27 sports. Twenty-five countries sent delegations of more than 100 athletes, including Russia, Brazil, France, Germany, and Poland.<sup>65</sup>

<sup>64</sup> Cortez, Michelle Fay. "The Last—And Only—Foreign Scientist in the Wuhan Lab Speaks Out." *Bloomberg*, 27 June 2021, [www.bloomberg.com/news/features/2021-06-27/did-covid-come-from-a-lab-scientist-at-wuhan-institute-speaks-out](https://www.bloomberg.com/news/features/2021-06-27/did-covid-come-from-a-lab-scientist-at-wuhan-institute-speaks-out).

<sup>65</sup> "Military Games to Open Friday in China." *China Daily*, 17 Oct. 2019, [www.china.org.cn/sports/2019-10/17/content\\_75311946.htm](http://www.china.org.cn/sports/2019-10/17/content_75311946.htm).



The PRC government recruited 236,000 volunteers for the games, which required 90 hotels, three railroad stations, and more than 2,000 drivers.<sup>66</sup> An archived version of the competition's website from October 20, 2019, lists the more than thirty venues that hosted events for the MWGs across Wuhan and the broader Hubei province.<sup>67</sup> The live website is no longer accessible – it is unclear why it was removed.

During the games, many of the international athletes became sick with what now appear to be symptoms of COVID-19. In one interview, an athlete from Luxembourg described Wuhan as a “ghost town,”<sup>68</sup> and recalls having his temperature taken upon arriving at the city's airport. In an interview with *The Financial Post*, a Canadian newspaper, one member of the Canadian Armed Forces who participated in the games said (emphasis added):

**This was a city of 15 million people that was in lockdown. It was strange, but we were told this was to make it easy for the Games' participants to get around. [I got] very sick 12 days after we arrived, with fever, chills, vomiting, insomnia.... On our flight to come home, 60 Canadian athletes on the flight were put in isolation [at the back of the plane] for the 12-hour flight. We were sick with symptoms ranging from coughs to diarrhea and in between.**<sup>69</sup>

The service member also revealed his family members became ill as his symptoms increased,<sup>70</sup> a development that is consistent with both human-to-human transmission of a viral infection and COVID-19. Similar claims about COVID-19 like symptoms have been made by athletes from Germany, France, Italy,<sup>71</sup> and Sweden.<sup>72</sup>

By cross referencing the listed MWG venues with publicly available mapping data, it is possible to visualize the venues (in black) in relation to the WIV Headquarters (in red) and the above-mentioned hospitals (in blue). The green figures represent athletes who have publicly expressed their belief they contracted COVID-19 while in Wuhan and are mapped at the venues which hosted the events in which they competed. Some of these athletes resided in the military athletes' village.

“  
[I got] very sick 12 days after we arrived, with fever, chills, vomiting, insomnia.... On our flight to come home, 60 Canadian athletes on the flight were put in isolation [at the back of the plane] for the 12-hour flight. We were sick with symptoms ranging from coughs to diarrhea and in between.  
”

- Canadian Athlete

<sup>66</sup> “2019 Military World Games Kicks off in Central China's Wuhan.” *CISION*, 17 Oct. 2019, [www.prnewswire.com/news-releases/2019-military-world-games-kicks-off-in-central-chinas-wuhan-300940464.html](http://www.prnewswire.com/news-releases/2019-military-world-games-kicks-off-in-central-chinas-wuhan-300940464.html).

<sup>67</sup> “Competition Venues.” *Wuhan 2019 Military World Games*, [https://web.archive.org/web/20191020154108/en.wuhan2019mwg.cn/html/Competition\\_venues/](https://web.archive.org/web/20191020154108/en.wuhan2019mwg.cn/html/Competition_venues/).

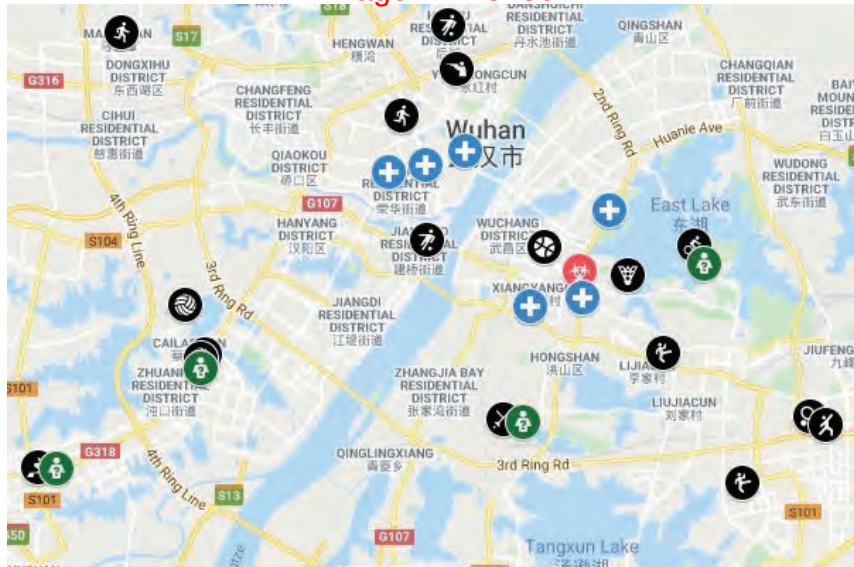
<sup>68</sup> Houston, Michael. “More athletes claim they contracted COVID-19 at Military World Games in Wuhan.” *Inside the Games*, 17 May 2020, <https://www.insidethegames.biz/articles/1094347/world-military-games-illness-covid-19>.

<sup>69</sup> Francis, Diane. “Diane Francis: Canadian Forces Have Right to Know If They Got COVID at the 2019 Military World Games in Wuhan.” *Financial Post*, 25 June 2021, <https://financialpost.com/diane-francis/diane-francis-canadian-forces-have-right-to-know-if-they-got-covid-at-the-2019-military-world-games-in-wuhan>.

<sup>70</sup> *Ibid.*

<sup>71</sup> Houston.

<sup>72</sup> Liao, George. “Coronavirus May Have Been Spreading since Wuhan Military Games Last October.” *Taiwan News*, 13 May 2020, [www.taiwannews.com.tw/en/news/3932712](http://www.taiwannews.com.tw/en/news/3932712).



Map 2: WIV Headquarters, Hospitals, MWG Venues, and Sick Athletes

At least four countries who sent delegations to the MWGs have now confirmed the presence of SARS-CoV-2 or COVID-19 cases within their borders in November and December 2019, before the news of an outbreak first became public.

**1. Italy.** In February 2021, researchers from Italy published a research letter in the CDC's Emerging Infectious Diseases journal describing a case involving a 4-year-old boy from Milan. A retrospective analysis of samples taken in 2019 identified the boy, who developed a cough on November 21, 2019, as having been infected with SARS-CoV-2 three months before Italy's first reported case. The boy had no reported travel history.<sup>73</sup>

**2. Brazil.** A March 2021 article by researchers in Brazil examined wastewater samples from October to December 2019. Previous studies have confirmed that humans infected with the virus can experience prolonged viral shedding via their gastrointestinal tract. **A sample from November 27th tested positive for SARS-CoV-2 RNA**, confirming the virus was circulating in Santa Catarina, Brazil months before January 21, 2020, when the first case in the Americas was reported.<sup>74</sup>

**3. Sweden.** Sweden's Public Health Agency said it is likely that individuals in the country were infected with SARS-CoV-2 as early as November 2019.<sup>75</sup>

<sup>73</sup> Amendola, Antonella, et. al. "Evidence of SARS-CoV-2 RNA in an Oropharyngeal Swab Specimen, Milan, Italy, Early December 2019." *Emerging Infectious Diseases*, Feb. 2021, 27(2). <https://doi.org/10.3201/eid2702.204632>

<sup>74</sup> Fongaro, Gislaine et al. "The presence of SARS-CoV-2 RNA in human sewage in Santa Catarina, Brazil, November 2019." *The Science of the Total Environment*, 8 March 2021, 778: 146198. <https://dx.doi.org/10.1016%2Fj.scitotenv.2021.146198>

<sup>75</sup> "Coronavirus May Have Arrived in Sweden in November: Public Health Agency." *The Local*, 5 May 2020, [www.thelocal.se/20200505/the-coronavirus-may-have-arrived-in-sweden-in-november/](http://www.thelocal.se/20200505/the-coronavirus-may-have-arrived-in-sweden-in-november/).

**4. France.** Researchers in France also re-tested samples from late 2019 in an effort to identify early COVID-19 cases. They identified a 42-year-old male who presented to the emergency room on December 27th with an influenza-like illness. He had no connection to the PRC and no recent travel history. Upon re-testing, the patient's samples were positive for SARS-CoV-2. It should be noted that one of his children also had similar symptoms before the man became sick, suggesting that the first case in France was likely earlier than December 27th.<sup>76</sup>

As stated above, athletes from France, Italy, and Sweden also complained of illnesses with symptoms similar to COVID-19 while at the MWGs in Wuhan. **The presence of SARS-CoV-2 in four countries, on two separate continents, suggests a common source. If, as presumed, SARS-CoV-2 first infected humans in Wuhan before spreading to the rest of the world, the 2019 Military World Games in Wuhan appears to be a key vector in the global spread – in other words, potentially one of the first “super spreader” events.**

### Conclusion

While much of the public debate was initially focused on the Huanan seafood market in Wuhan as the origin of the pandemic, the preponderance of evidence now suggests that the virus leaked from the Wuhan Institute of Virology. Given the WIV's demonstrated history of conducting gain-of-function experiments on coronaviruses, including genetically manipulating viruses specifically to make them infectious to humans in BSL-2 labs, as well as their possession of one of the world's largest collections of coronaviruses, it is completely plausible that one or more researcher(s) was accidentally infected and carried the virus out of the lab. The evidence outlined above, combined the cover-up conducted CCP authorities, strongly suggest the Wuhan Institute of Virology as the source of the current pandemic.

### **III. EVIDENCE OF GENETIC MODIFICATION**

The other topic of debate is whether the virus could have been genetically modified. The WIV was conducting gain-of-function research on coronaviruses and testing them against human immune systems in the months leading up to the emergence of SARS-CoV-2, however the scientific community has claimed it is not possible it was anything but a naturally occurring virus. But, as this report lays out, we believe it is a viable hypothesis that the virus could have been modified.

**“You can engineer a virus without leaving any trace. The answers you are looking for, however, can only be found in the archives of the Wuhan laboratory.”**

**– Dr. Ralph Baric**

<sup>76</sup> Deslandes, A et al. “SARS-CoV-2 was already spreading in France in late December 2019.” *International Journal of Antimicrobial Agents*, 3 May 2020, 55(6): 106006. <https://dx.doi.org/10.1016%2Fj.ijantimicag.2020.106006>

<sup>77</sup> Stahl, Lesley. “What Happened In WUHAN? Why Questions Still Linger on the Origin of the Coronavirus.” *CBS News*, 28 Mar. 2021, [www.cbsnews.com/news/covid-19-wuhan-origins-60-minutes-2021-03-28/](http://www.cbsnews.com/news/covid-19-wuhan-origins-60-minutes-2021-03-28/).

### Research Regarding SARS Like Coronaviruses from 2004-2017

The WIV's work on bat coronaviruses dates back to the aftermath of SARS in the early 2000s. Shi met Peter Daszak, an American citizen, in 2004 during an effort to find the origins of the 2002 SARS pandemic. Daszak is the CEO of EcoHealth Alliance, a New York-based NGO that funds scientific research around the world.<sup>78</sup> For the last year and a half, questions have been raised about how and why EcoHealth Alliance provided the WIV with U.S. taxpayer dollars. Those funds were provided to EcoHealth Alliance in



the form of grants from the Department of Health and Human Services (HHS), National Institutes of Health (NIH), National Science Foundation (NSF), and the United States Agency for International Development (USAID).

Beginning in 2005, and continuing over the next 16 years, Shi and Daszak have collaborated on coronavirus research. Together, they “led dozens of expeditions to caves full of bats, to collect samples and analyze them.”<sup>79</sup> They have identified more than 500 novel coronaviruses, including roughly 50 related to SARS or MERS, and they have repeatedly engaged in gain-of-function research on coronaviruses designed to make them more infectious in humans.<sup>80</sup> As discussed below, the vast majority of the most relevant scientific publications that have emerged from the WIV regarding coronaviruses was conducted with funding provided by Peter Daszak through EcoHealth Alliance.

**Article and Publication:** “Bats Are Natural Reservoirs of SARS-Like Coronaviruses,” in Science (2005).

**Participants:** Li Wendog, primary author; Shi, second author and one of three corresponding authors; Peter Daszak; additional scientists from Australia and China.

**Funding:** The paper was supported in part by funding from the PRC government, who provided a special grant for Animal Reservoirs of SARS-CoV from the State Key Program for Basic Research (grant no. 2005CB523004) and the State High Technology Development Program (grant no. 2005AA219070) from the Ministry of Science and Technology.

<sup>78</sup> Zaugg, Julie. “In Wuhan with Bat Woman, at the origins of the Covid-19.” *L’Illustré*, 22 Jan. 2021, <https://www.illustré.ch/magazine/a-wuhan-avec-bat-woman-aux-origines-du-covid-19>

<sup>79</sup> *Ibid.*

<sup>80</sup> *Ibid.*



It was also funded by the U.S. government, through the NIH and NSF, who provided funding in the form of an ‘Ecology of Infectious Diseases’ award (no. R01-TW05869) from the John E. Fogarty International Center and the V. Kann Rasmussen Foundation.

**Purpose:** The scientists hoped to identify the origins of SARS by identifying species of bats which are a natural host for SARS-like coronaviruses.

**Conclusion:** “These findings on coronaviruses, together with data on henipaviruses (23–25, 28), suggest that genetic diversity exists among zoonotic viruses in bats, increasing the possibility of variants crossing the species barrier and causing outbreaks of disease in human populations. It is therefore essential that we enhance our knowledge and understanding of reservoir host distribution, animal-animal and human-animal interaction (particularly within the wet-market system), and the genetic diversity of bat-borne viruses to prevent future outbreaks.”<sup>81</sup>

**Relevance:** This conclusion would drive the next fifteen years of collaboration between the WIV and Peter Daszak, with Shi directing the laboratory work.

In 2006, Shi and Daszak collaborated with a researcher in Australia to publish “Review of bats and SARS” in *Emerging Infectious Diseases*, a peer-reviewed journal published monthly by the U.S. Centers for Disease Control and Prevention. Shi was again listed as the second author, and the work was funded by the same PRC and NIH/NSF grants referenced above. The following year, these grants supported the publication of “Evolutionary Relationships between Bat Coronaviruses and Their Hosts” in *Emerging Infectious Diseases*. Shi is listed as the sixth author, followed by another WIV researcher, and Peter Daszak is listed as one of two corresponding authors.<sup>82</sup><sup>83</sup>

In 2007, Shi and several other WIV researchers joined additional scientists in publishing another paper on coronaviruses.

**Article and Publication:** “Difference in Receptor Usage between Severe Acute Respiratory Syndrome (SARS) Coronavirus and SARS-Like Coronavirus of Bat Origin” in *Journal of Virology*.

**Participants:** WIV researchers and Linfa Wang. Shi is listed as the corresponding author.

**Funding:** This work was funded by the PRC government and grants from Australia and the European Commission.

**Purpose:** This study focused on the receptors used by the spike protein of SARS-like coronaviruses, which are the major surface structures that enable coronaviruses to bind to receptors on cells. To test this, researchers created multiple chimeric viruses by inserting different sequences of the SARS-CoV spike protein into the spike protein of the SARS-like virus being examined, and tested them against bat, civet, and human ACE2 expressing cells.

**Conclusion:** One of these chimeric viruses was able to enter cells through the human ACE2 receptor. ACE2 is an abbreviation for angiotensin converting enzyme-2, which is a protein found on the surface of cells and tissues throughout the human body,

<sup>81</sup> *Ibid.*

<sup>82</sup> Wang L-F, Shi Z, Zhang S, Field H, Daszak P, Eaton BT. “Review of bats and SARS.” *Emerg Infect Dis*, Dec. 2006; 12(12): 1834-1840., <http://dx.doi.org/10.3201/eid1212.060401>

<sup>83</sup> Cui J, et. al. “Evolutionary relationships between bat coronaviruses and their hosts.” *Emerg Infect Dis.*, Oct. 2007; 13(10):1526-32. [https://wwwnc.cdc.gov/eid/article/13/10/07-0448\\_article](https://wwwnc.cdc.gov/eid/article/13/10/07-0448_article)



including the nose, mouth, and lungs. “In the lungs, ACE2 is highly abundant on type 2 pneumocytes, an important cell type present in chambers within the lung called alveoli, where oxygen is absorbed and waste carbon dioxide is released.”<sup>84</sup> ACE2 is also the location where SARS-CoV-2’s spike protein binds to human cells. Researchers concluded that “a minimal insert region” is “sufficient to convert the SL-COV S [SARS-like coronavirus spike protein] from non-ACE2 binding to human ACE2 binding.”<sup>85</sup>

**Relevance:** In other words, WIV researchers were able to take a SARS-like coronavirus that does not infect humans and modify it so it was able to do so. Also importantly, this work was done under BSL-2 conditions.

Shi and Daszak do not appear as coauthors on a paper again until 2013.

**Article and Publication:** “Isolation and characterization of a bat SARS-like coronavirus that uses the ACE2 receptor” in *Nature*.<sup>86</sup>

**Participants:** WIV and EcoHealth researchers, including Hu., Shi, Daszak, and Wang who are credited for designing the experiments. Shi and Daszak listed as corresponding authors.

**Funding:** The study was funded by grants from the PRC government (including grant no. 2013FY113500), as well as the National Institute of Allergy and Infectious Diseases (NIAID) (no. R01AI079231), a NIH/NSF “Ecology and Evolution of Infectious Diseases” award (no. R01TW005869), an award from the NIH Fogarty International Center supported by International Influenza Funds from the Office of the Secretary of the Department of Health and Human Services (no. R56TW009502), and USAID’s Emerging Pandemic Threats PREDICT program.<sup>87</sup>

**Purpose:** This work marked “the first recorded isolation of a live SL-CoV” [SARS-live coronavirus], which researchers isolated from bat fecal samples and named WIV1. Additionally, they identified two novel bat coronaviruses (SCH014 and Rs3367) and reported “the first identification of a wild-type bat SL-CoV capable of using ACE2 as an entry receptor.”<sup>88</sup>

**Conclusion:** “Finally, this study demonstrates the public health importance of pathogen discovery programs targeting wildlife that aim to identify the ‘known unknowns’—previously unknown viral strains closely related to known pathogens. These programs, focused on specific high-risk wildlife groups and hotspots of disease emergence, may be a critical part of future global strategies to predict, prepare for, and prevent pandemic emergence.”<sup>90</sup>

**Relevance:** By isolating a wild-type (common strain in nature) SARS-like coronavirus that binds to ACE2, and testing it in human lung tissue, the authors proved that bat coronaviruses are capable of infecting humans directly, without having to pass through an intermediate host.

<sup>84</sup> Sriram, Krishna, et al. “What Is the ACE2 Receptor, How Is It Connected to Coronavirus and Why Might It Be Key to Treating COVID-19? The Experts Explain.” *The Conversation*, 25 May 2021, <https://theconversation.com/what-is-the-ace2-receptor-how-is-it-connected-to-coronavirus-and-why-might-it-be-key-to-treating-covid-19-the-experts-explain-136928>.

<sup>85</sup> Ren.

<sup>86</sup> Ge, Xing-Yi et al. “Isolation and characterization of a bat SARS-like coronavirus that uses the ACE2 receptor.” *Nature*, 30 Oct. 2013, 503(7477): 535-8, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5389864/>

<sup>87</sup> *Ibid.*

<sup>88</sup> *Ibid.*

<sup>89</sup> *Ibid.*

<sup>90</sup> *Ibid.*

In 2014, Shi and Daszak coauthored two more joint WIV-EcoHealth Alliance papers. The lead author for one of the papers, entitled “Detection of diverse novel astroviruses from small mammals in China,” was Ben Hu, a WIV researcher who was a coauthor of earlier Shi/Daszak papers. Shi is listed as the corresponding author, and the paper was again jointly funded by the PRC government (including grant no. 2013FY113500) and USAID’s PREDICT program.<sup>91</sup>

The next year, in 2015, Shi provided Ralph Baric and other researchers at the University of North Carolina at Chapel Hill with spike protein sequences and plasmids of SCH014, one of the viruses Shi, Daszak, and WIV researchers identified in bat feces samples in 2013. American researchers used those samples to create “a chimeric virus expressing the spike of bat coronavirus SHC014 in a mouse-adapted SARS-CoV backbone.”<sup>92</sup> **In other words, they removed the spike protein from SHC014 and inserted it into a SARS coronavirus that was genetically manipulated to better infect mice.** This work was done under BSL-3 conditions. The newly created virus was then shown to bind to ACE2 in humans, replicate “efficiently”<sup>93</sup> in primary human airways cells, and withstand antibodies and vaccines. Researchers concluded that the work “suggests a potential risk of SARS-CoV re-emergence from viruses currently circulating in bat populations.”<sup>94</sup> This research was funded by NIAID and the NIH under multiple awards (nos. U19AI109761, U19AI107810, AI085524, F32AI102561, K99AG049092, DK065988), USAID’s PREDICT program via EcoHealth Alliance, and the PRC government. Baric was the corresponding author.<sup>95</sup>

2015 also saw the publication of another Shi/Hu/Wang/Daszak paper. Entitled “Isolation and Characterization of a Novel Bat Coronavirus Closely Related to the Direct Progenitor of Severe Acute Respiratory Syndrome Coronavirus,” it was published in the *Journal of Virology*. Nine of the twelve authors were WIV researchers, including Hu and Shi, who was the corresponding author. Here the WIV reported the successful isolation of a second novel coronavirus, WIV16. The SARS-like coronavirus was isolated from a single sample of bat fecal matter collected in Kunming, Yunnan Province of the PRC in July 2013. Like previous papers, this work was supported by a NIAID grant (no. R01AI110964) and by grants from the PRC government (including grant no. 2013FY113500).<sup>96</sup>

In addition to her aforementioned work with researchers at UNC Chapel Hill, Shi also provided them with additional bat coronavirus sequences and plasmid of WIV1’s spike protein. The resulting paper, “SARS-like WIV1-CoV poised for human emergence,” was published in the Proceedings of the National Academy of Sciences of the United States of America in March 2016. While neither Shi nor Daszak (nor any WIV researcher) are listed as coauthors, Baric was the corresponding author.

<sup>91</sup> Hu, Ben, et. al. “Detection of diverse novel astroviruses from small mammals in China.” *J Gen Virol*. Nov 2014, 95(Pt 11): 2442-2449. <https://pubmed.ncbi.nlm.nih.gov/25034867/>

<sup>92</sup> Menachery, Vineet, et. al. “A SARS-like cluster of circulating bat coronaviruses shows potential for human emergence.” *Nat Med*, 9 Nov. 2015, 21:1508–1513. <https://doi.org/10.1038/nm.3985>

<sup>93</sup> Menachery

<sup>94</sup> *Ibid.*

<sup>95</sup> *Ibid.*

<sup>96</sup> Yang, Xing-Lou et al. “Isolation and Characterization of a Novel Bat Coronavirus Closely Related to the Direct Progenitor of Severe Acute Respiratory Syndrome Coronavirus.” *Journal of Virology*, 30 Dec. 2015, 90(6): 3253-6. <https://dx.doi.org/10.1128%2FJVI.02582-15>

**This paper is significant because the authors discuss moving from disease surveillance to creating chimeric viruses as a means of pandemic preparedness;** “this manuscript describes efforts to extend surveillance beyond sequence analysis, constructing chimeric and full-length zoonotic coronaviruses to evaluate emergence potential.”<sup>97</sup>

During this work, researchers produced chimeric viruses created by inserting the spike protein from WIV1 into a strain of SARS-CoV adapted to infecting mice. They subsequently tested this chimeric virus in human airway epithelial cells as well as in mice.<sup>98</sup> In addition to standard BALB/c mice (a strain of albino, lab-breed house mice used in experimentation<sup>99</sup>), researchers genetically manipulated the mice to create a strain of mice expressing the human ACE2 (hACE2) receptor. While hACE2 was found primarily in the lungs of the mice, it was also present in the brain, liver, kidneys, and gastrointestinal tract. The WIV1 chimeric virus was then tested in these hACE2 expressing mice, proving that the chimeric virus could infect humans. This work was funded by NIAID and NIH awards (nos. U19AI109761, U19AI107810, AI1085524, F32AI102561, K99AG049092, DK065988, AI076159, and AI079521).<sup>100</sup>

In 2016, Shi and Daszak also coauthored two additional papers focused on infectious diseases that year. One, entitled “Bat Severe Acute Respiratory Syndrome-Like Coronavirus WIV1 Encodes an Extra Accessory Protein, ORFX, Involved in Modulation of the Host Immune Response,” was coauthored by Wang and represents a major step forward in the WIV’s work. While working on this project, WIV researchers created a reverse genetics system and used it to genetically modify WIV1, the live coronavirus that was successfully isolated in 2013 and that UNC researchers manipulated months earlier. WIV researchers created multiple versions of this virus by deleting or adding genetic information to the virus’ RNA. According to the paper, all experiments with live virus for this paper were done under BSL-2 conditions, which does not require respirators or biological safety cabinets. Nine of the eleven authors are WIV researchers, and Shi is the corresponding author. The experimentation for the paper was supported by a grant from NIAID (no. R01AI110964) and funding from the PRC government.<sup>101</sup>

The following year, Ben Hu was the lead author of a paper entitled “Discovery of a rich gene pool of bat SARS-related coronaviruses provides new insights into the origin of SARS coronavirus.” As with previous papers, the overwhelming majority (14 out of 17) of the authors worked at the WIV. Daszak, Shi, and Wang are all listed as coauthors. Hu is the lead author and Shi is one of two corresponding authors. Daszak is credited for “funding acquisition.”<sup>102</sup>

Additionally, using the reverse genetics system they debuted the previous year, WIV researchers created eight separate chimeric viruses by inserting the spike protein of various SARS-like coronaviruses into WIV1. Two of these chimeric viruses (WIV1-Rs4231S and WIV1-Rs7327S), and one natural virus, Rs4874, all replicated within hACE2 expressing cells.<sup>103</sup>

<sup>97</sup> Menachery, Vineet, et al. “SARS-like WIV1-CoV poised for human emergence.” *Proceedings of the National Academy of Sciences of the United States of America*, 14 March 2016, 113(11): 3048-53. <https://dx.doi.org/10.1073%2Fpnas.1517719113>

<sup>98</sup> *Ibid.*

<sup>99</sup> “Inbred Strains: BALB.” MGI, [www.informatics.jax.org/inbred\\_strains/mouse/docs/BALB.shtml](http://www.informatics.jax.org/inbred_strains/mouse/docs/BALB.shtml).

<sup>100</sup> Menachery 2016.

<sup>101</sup> Zeng, Lei-Ping et al. “Bat Severe Acute Respiratory Syndrome-Like Coronavirus WIV1 Encodes an Extra Accessory Protein, ORFX, Involved in Modulation of the Host Immune Response.” *Journal of Virology*, 24 June 2016, 90(14): 6573-6582. <https://dx.doi.org/10.1128%2FJVI.03079-15>

<sup>102</sup> Hu, Ben et al. “Discovery of a rich gene pool of bat SARS-related coronaviruses provides new insights into the origin of SARS coronavirus.” *PLOS Pathogens*, 30 Nov. 2017, 13(11). <https://dx.doi.org/10.1371%2Fjournal.ppat.1006698>

<sup>103</sup> Hu, 2017.

To reiterate, WIV researchers created chimeric coronaviruses able to infect humans in 2017, before the WNBL BSL-4 lab became operational. This work was jointly funded by NIAID (no. R01AI110964), USAID's PREDICT program, and the PRC government (including grant no. 2013FY113500).

Research Regarding SARS-Like Coronaviruses at the WIV or in Conjunction with WIV Scientists from 2018-2019

While Shi and Daszak coauthored several additional papers in 2018 and 2019 regarding coronaviruses, none include gain-of-function research on SARS-like coronaviruses designed to make them more infectious to humans. This is especially odd given that in 2018 the Chinese Academy of Science launched a new special project titled "Pathogen Host Adaption and Immune Intervention."<sup>104</sup> One of the five subprojects was titled "Research on Virus Traceability, Cross-Species Transmission, and Pathogenic Mechanism,"<sup>105</sup> – Shi is listed as one of the two scientists in charge. This subproject had three areas of focus: 1) the traceability, evolution and transmission mechanism of new pathogens; 2) molecular mechanisms of viral cross-species infection and pathogenicity, and 3) the interaction mechanism between virus and host.

A second WIV scientist, Cui Zongqiang, was one of two researchers in charge of another subproject entitled, "New methods and new technologies for infection and immune research."<sup>106</sup> This project focused on, among other things, evaluating new vaccines and establishing "humanized small animal models"<sup>107</sup> for in vitro pathogen testing.<sup>108</sup>

In January 2018, Shi was appointed Principal Investigator for a new Strategic Priority Research Program of the Chinese Academy of Sciences (grant no. XBD29010101, \$1.35 million USD),<sup>109</sup> investigating "genetic evolution and transmission mechanism of important bat-borne viruses." This project, especially with its focus on transmission mechanisms, aligns with the first focus area mentioned above. That same month, Shi began work on a project titled "Study on the evolutionary mechanism of bat SARS-like coronavirus adapted to host receptor molecules and the risk of cross-species infection."<sup>110</sup> The project was funded at a value of roughly \$850,000 USD (grant no. 31770175) and is slated to run until December 2021.<sup>111</sup> This grant aligns with the second focus area, the description of which specifically mentions replicating and modifying coronaviruses (emphasis added):

For important emerging emergencies and virulent viruses (influenza virus, Ebola virus, coronavirus, Marburg virus, arenavirus, etc.), by studying **their ability to invade different host cells and their ability to replicate in different host cells**, analyze the key molecules affecting their cross-species infections and their pathogenic mechanisms. Including: virus invasion, virus replication and assembly, and infection model.<sup>112</sup>

<sup>104</sup> "Guidelines for the application of the 'Pathogen Host Adaptation and Immune Intervention' project of the Chinese Academy of Sciences Strategic Leading Technology." Chinese Academy of Sciences, 6 Sept. 2018, <https://archive.is/spmNg#selection-3389.0-3389.160>

<sup>105</sup> *Ibid.*

<sup>106</sup> *Ibid.*

<sup>107</sup> *Ibid.*

<sup>108</sup> *Ibid.*

<sup>109</sup> Shi, Zheng-li. "Curriculum Vitae." <https://www.ws-virology.org/wp-content/uploads/2017/11/Zhengli-Shi.pdf>

<sup>110</sup> "Study on the evolutionary mechanism of bat SARS-like coronavirus adapted to host receptor molecules and the risk of cross-species infection."

<sup>110</sup> *MedSci*, <https://archive.is/g35C6#selection-1425.0-1425.139>

<sup>111</sup> *Ibid.*

<sup>112</sup> "Guidelines for the application of the 'Pathogen Host Adaptation and Immune Intervention' project of the Chinese Academy of Sciences Strategic Leading Technology." Chinese Academy of Sciences, 6 Sept. 2018, <https://archive.is/spmNg#selection-3389.0-3389.160>



Shi did not publish any papers funded by this grant before the start of the pandemic. As such, it is impossible to know what experiments she was conducting in the months prior to the pandemic.

Further evidence expands on Shi's work in 2018 and 2019. In January 2019, Shi and several other scientists were awarded a National Natural Science Award Second Prize for a project entitled, "Research on Important Viruses Carried by Chinese Bats."<sup>113</sup> Five out of the six researchers on the award were coauthors of the previously discussed 2013 paper entitled, "Isolation and characterization of a bat SARS-like coronavirus that uses the ACE2 receptor."

In January 2019, Ben Hu, was awarded \$385,850 in grant money (grant no. 31800142) by the Youth Science Fund Project (YSFP) of the National Natural Science Foundation of China.<sup>114</sup> The YSFP "supports the young researchers to independently select topics within the scope of the scientific funding and carry out basic research."<sup>115</sup> This project, selected by Ben Hu, was titled, "Pathogenicity of two new bat SARS-related coronaviruses to transgenic mice expressing human ACE2."<sup>116</sup> To date, the two novel SARS-related coronaviruses have not been identified, and the grant money has only been cited in papers published about SARS-CoV-2.

**WIV researchers confirmed to the WHO investigative team that they were conducting experimentations testing chimeric coronaviruses in 2018 and 2019.<sup>117</sup> According to an interview with Shi published by *Science*, all coronavirus experimentation, including infecting hACE2 mice and civets, was done at the BSL-2 and BSL-3 levels – "the coronavirus research in our laboratory is conducted in BSL-2 or BSL-3 laboratories."<sup>118</sup>**

This ongoing work appears to coincide with Peter Daszak's stated goal of developing a broad-spectrum coronavirus vaccine. In a May 19, 2020, interview with "This Week in Virology," Daszak discussed the goal of the gain-of-function work he funded on coronaviruses with the WIV (emphasis added):

Coronaviruses are pretty good – I mean you're a virologist, you know all this stuff – but the... you can... um manipulate them in the lab pretty easily. The spike protein drives a lot of what happens with the coronavirus – zoonotic risk. So, you can get the sequence, you can build the protein, and we work with Ralph Baric at UNC to do this, insert it into a backbone of another virus, and do some work in the lab. So, you can get more predictive when you find a sequence – you've got this diversity. Now, the logical progression for vaccines is, if you're going to develop a vaccine for SARS, people are going to use pandemic SARS, **but let's try to insert some of these other related [viruses] and get a better vaccine.**

<sup>113</sup> "Catalogue and introduction of the 2018 National Natural Science Award winning projects." *Ministry of Science and Technology*, 8 Jan. 2019, <https://archive.is/jKq7B#selection-187.0-187.86>.

<sup>114</sup> "Pathogenicity of two new bat SARS-related coronaviruses to transgenic mice expressing human ACE2." *MedSci*, <https://archive.is/shrM2#selection-1545.0-1558.0>.

<sup>115</sup> "[Good News] 100% winning bid! All applications of the National Natural Science Foundation of China(NSFC) were approved." *Faculty of Economics and Management, ECNU Academy of Statistics and Interdisciplinary Sciences*, 11 May 2020, <http://asis.ecnu.edu.cn/asisenglish/64/ba/c23635a287930/page.htm>.

<sup>116</sup> "Pathogenicity of two new bat SARS-related coronaviruses to transgenic mice expressing human ACE2." *MedSci*, <https://archive.is/shrM2#selection-1545.0-1558.0>.

<sup>117</sup> Joint Report – ANNEXES.

<sup>118</sup> Shi, Zheng-li. "Reply to Science Magazine." *Science Magazine*, <https://www.sciencemag.org/sites/default/files/Shi%20Zhengli%20Q%26A.pdf>

<sup>119</sup> Racaniello, Vincent. "TWiV 615: Peter Daszak of EcoHealth Alliance." YouTube, interview by Vincent Racaniello, 19 May 2020, [https://www.youtube.com/watch?v=IdYDL\\_RK--w](https://www.youtube.com/watch?v=IdYDL_RK--w).



Shi, Hu, and others at the WIV were the ones collecting, identifying, genetically modifying, and testing these novel coronaviruses against human immune systems for Peter Daszak.

**In sum, in the years leading up to the emergence of SARS-CoV-2, there was:**

- **Research by Shi and others at the WIV on how to alter the spike protein of non-infectious SARS-like coronaviruses so that they can bind to human ACE2 receptors;**
- **Repeated collaboration between Shi, Hu, Daszak, Wang, and other researchers on genetically manipulating coronaviruses to increase their infectiousness in humans;**
- **A new PRC Strategic Priority Research Program, run by Shi, that was actively manufacturing chimeric viruses in BSL-2 and BSL-3 conditions and seeking out novel viruses;**
- **Evidence of ongoing collaboration between Shi and the other scientists who first isolated a live coronavirus in 2013;**
- **A second grant awarded to Hu to test novel coronaviruses against human immune systems in BSL-2 and BSL-3 conditions;**
- **A stated effort to develop a broad-spectrum coronavirus vaccine.**

**Given the above, it is self-evident that Shi and her colleagues, with funding and support from Daszak, were actively genetically manipulating coronaviruses and testing them against human immune systems in 2018 and 2019, before the beginning of the pandemic.**

### **Unusual Features of SARS-CoV-2**

Committee Minority Staff interviews with scientists and current and former U.S. government officials raised several questions about the natural origins of SARS-CoV-2, including:

1. The highly infectious nature of SARS-CoV-2, which they consider as infectious as measles;
2. The lack of an identified intermediate host (found 4 months after the outbreak of SARS and 9 months after MERS); and
3. The highly efficient binding to human ACE2.

The highly contagious nature of SARS-CoV-2 has been a hot topic of conversation since the virus began to spread around the world. Some scientists and other experts point to the incredibly high case numbers as evidence that SARS-CoV-2 is inherently different from known natural betacoronaviruses. For example, MERS first appeared in 2012 and has infected less than 4,000 people. SARS first appeared in 2002 and infected less than 10,000. At the time of writing, less than two years from when it has first appeared, SARS-CoV-2 has infected more than 196.4 million people.

SARS-CoV-2 also has a highly unusual affinity for binding to human ACE2 receptors over other hosts. In February 2020, American researchers examined this issue closely. They found that SARS-CoV-2's spike protein "binds at least 10 times more tightly than the corresponding spike protein of severe acute respiratory syndrome (SARS)-CoV to their common host cell receptor."<sup>120</sup> In other words, SARS-CoV-2 binds more than 10 times more tightly to human ACE2 than the virus that causes SARS. The researchers found this likely explains why the virus is so contagious.<sup>121</sup>

<sup>120</sup> Wrapp, Daniel et al. "Cryo-EM structure of the 2019-nCoV spike in the prefusion conformation." *Science*, 13 March 2020, 367(6483): 1260-1263. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7164637/>

<sup>121</sup> *Ibid.*

Australian and British researchers also examined how SARS-CoV-2 binds to the ACE2 of various animals, publishing their research in *Scientific Reports* on June 24, 2021. The scientists found that SARS-CoV-2's spike protein binds the strongest to human ACE2. They reported (emphasis added):

This finding was surprising as a **zoonotic virus typically exhibits the highest affinity initially for its original host species**, with lower initial affinity to receptors of new host species until it adapts. As the virus adapts to its new host, mutations are acquired that increase the binding affinity for the new host receptor. Since **our binding calculations were based on SARS-CoV-2 samples isolated in China from December 2019**, at the very onset of the outbreak, the extremely high affinity of S protein for human ACE2 was unexpected.<sup>122</sup>

The first preprint version of this paper went further, concluding, "the data indicates that SARS-CoV-2 is uniquely adapted to infect humans, **raising important questions as to whether it arose in nature by a rare chance event or whether its origins might lie elsewhere**" emphasis added.<sup>123</sup> **This research provides evidence that SARS-CoV-2 is uniquely well adapted to humans, suggesting a non-zoonotic source of the outbreak.**

### The Furin Cleavage Site

One of the most discussed questions centers around the furin cleavage site (FCS) of SARS-CoV-2. The FCS is part of the virus' spike protein, which enables it to bind to and enter human cells. In February 2020, French and Canadian scientists reported SARS-CoV-2 contains an FCS that is absent in other coronaviruses of the same clade, or branch of viruses believed to have a similar common ancestor. The scientists also reported that when a bronchitis virus was modified by inserting a similar cleavage site, the virus' pathogenicity was increased.<sup>124</sup> While some scientists have noted that other coronaviruses contain furin cleavage sites, phylogenetic analysis shows that SARS-CoV-2 is the only identified sarbecovirus (a subsection of *betacoronaviruses*) with this feature.<sup>125</sup>

In January 2021 a group of American researchers published "Loss of furin cleavage site attenuates SARS-CoV-2 pathogenesis" in *Nature*. In the article, researchers reported the FCS "may have facilitated the emergence of SARS-CoV-2 in humans."<sup>126</sup> Using a reverse genetic system, they created a mutant strain of SARS-CoV-2 which lacked the FCS. The result was a virus that was weakened in human respiratory cells and that exhibited reduced development in hACE2 expressing mice. This demonstrates the importance of the FCS in the rapid spread of COVID-19.

<sup>122</sup> Piplani, S., et. al. "In silico comparison of SARS-CoV-2 spike protein-ACE2 binding affinities across species and implications for virus origin." *Scientific Reports*, 24 June 2021, 11(13063) <https://www.nature.com/articles/s41598-021-92388-5>

<sup>123</sup> Piplani, S., et. al. Preprint of "In silico comparison of SARS-CoV-2 spike protein-ACE2 binding affinities across species and implications for virus origin." *ArXiv*, 13 May 2020, <https://arxiv.org/abs/2005.06199v1>

<sup>124</sup> Coutard, B et al. "The spike glycoprotein of the new coronavirus 2019-nCoV contains a furin-like cleavage site absent in CoV of the same clade." *Antiviral Research*, Feb. 2020, 176: 104742 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7114094/>

<sup>125</sup> Wu, Yiran, and Suwen Zhao. "Furin cleavage sites naturally occur in coronaviruses." *Stem Cell Research*, 9 Dec. 2020, 50:102115. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7836551/>

<sup>126</sup> Johnson, B.A., et. al. "Loss of furin cleavage site attenuates SARS-CoV-2 pathogenesis." *Nature*, 25 Jan. 2021, 591: 293-299. <https://www.nature.com/articles/s41586-021-03237-4>

In other words, did the FCS develop naturally, or was it added in via genetic manipulation? Part of the genetic sequence for the FCS includes a CGG double codon (CGG-CGG). This group of six nucleotides (a group of three nucleotides is also known as a codon) is half of the 12 nucleotides that create the FCS. SARS-CoV-2 is the only identified coronavirus within its class to feature this combination. Some believe this is evidence of genetic manipulation, arguing this double codon is a telltale sign of the FCS being artificially inserted into the virus.<sup>127</sup>

### The “No-See-Um” Method

Critics of the theory that the virus was genetically modified or man-made have repeatedly pointed to the apparent lack of telltale signs of genetic manipulation in the SARS-CoV-2 genome. They claim this is “proof” the virus was not only naturally occurring, but that the COVID-19 pandemic could only be the result of a zoonotic spillover event. Such arguments ignore key pieces of evidence to the contrary.

In 2005, Ralph Baric, one of the researchers at UNC Chapel Hill with whom Shi would later collaborate with between 2014 and 2016, published a paper entitled, “Development of mouse hepatitis virus and SARS-CoV infectious cDNA constructs.”<sup>128</sup> In this paper, Baric references using a novel genetic engineering system he developed with other UNC colleagues to engineer full-length SARS-CoV genomes via a “no-see-um” method. This method allows for the assembly of various partial genomic sequences into a full-length genome, creating a new and infectious coronavirus.<sup>129</sup> The publication includes the below figure, which is titled, “Systemic Assembly Strategy for the SARS-CoV infectious clone.” It clearly shows the various SARS fragments and how they were used to create a full-length, custom genomic sequence.

**Molecularly cloned viruses were indistinguishable from wild type.**

**– Dr. Ralph Baric**

<sup>127</sup> Quay, Steven, and Richard Muller. “The Science Suggests a Wuhan Lab Leak.” *The Wall Street Journal*, 6 June 2021, [www.wsj.com/articles/the-science-suggests-a-wuhan-lab-leak-11622995184](https://www.wsj.com/articles/the-science-suggests-a-wuhan-lab-leak-11622995184).

<sup>128</sup> Baric R.S., Sims A.C. “Development of Mouse Hepatitis Virus and SARS-CoV Infectious cDNA Constructs.” *Curr Top Microbiol Immunol*, 2005; 287:229-52. [https://doi.org/10.1007/3-540-26765-4\\_8](https://doi.org/10.1007/3-540-26765-4_8)

<sup>129</sup> *Ibid*.

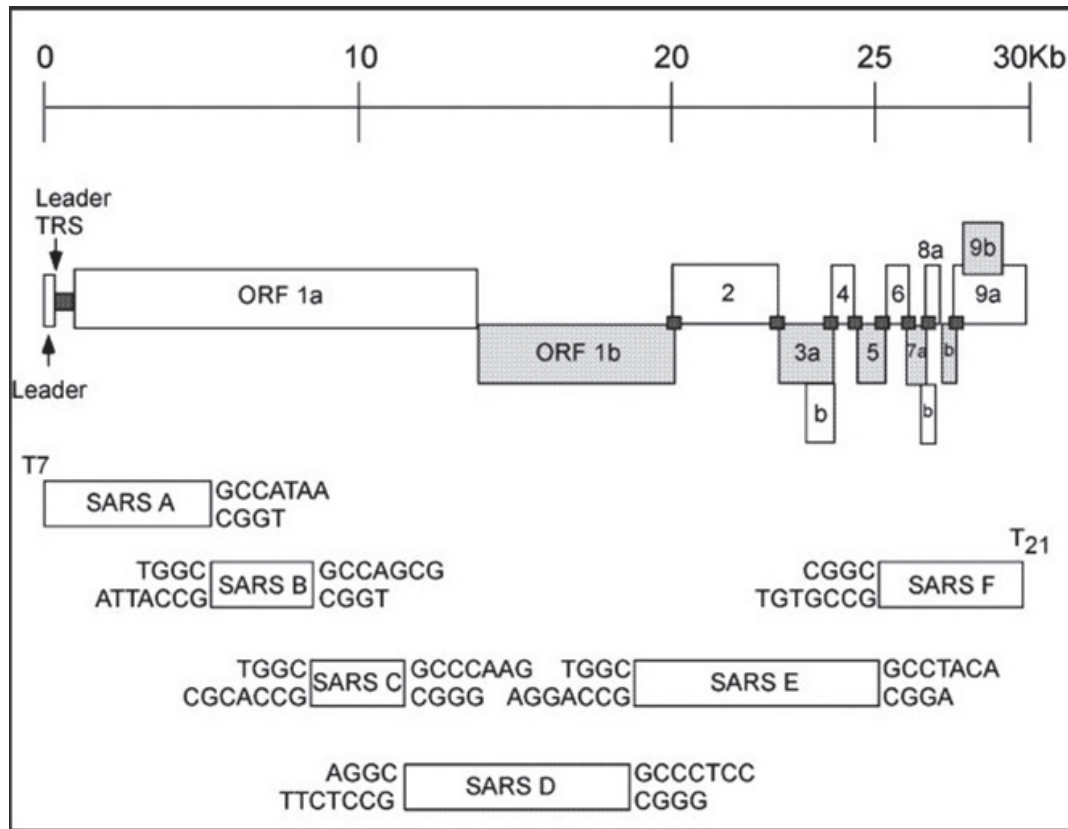


Fig. 5: Baric's "No-See-Um" System

The paper stated these viruses were “indistinguishable from wild type,”<sup>130</sup> meaning that it is impossible to tell they were synthetically created.

Baric himself confirmed this interpretation in a September 2020 interview, where he stated, “You can engineer a virus without leaving any trace. The answers you are looking for, however, can only be found in the archives of the Wuhan laboratory.”<sup>131</sup> Referring to chimeric viruses he generated in 2015 with WIV researchers, Baric said his team intentionally left signature mutations to show that it was genetically engineered. “Otherwise there is no way to distinguish a natural virus from one made in the laboratory.”<sup>132</sup>

Shi and Baric have collaborated on multiple papers regarding coronaviruses. The most recent of which was in May 2020, when they joined other researchers in publishing “Pathogenesis of SARS-CoV-2 in Transgenic Mice Expressing Human Angiotensin-Converting Enzyme 2.”<sup>133</sup> **One year later, Baric signed onto a May 14, 2021, letter published in *Science* which argued that the lab leak theory must be taken seriously and should be fully evaluated.**<sup>134</sup>

<sup>130</sup> *Ibid.*

<sup>131</sup> Renda, Silvia. “Possibile Creare Un Virus in Laboratorio Senza Lasciare Traccia? La Risposta Dell'autore Della Chimera Del 2015 Di Cui Parlò Tg Leonardo.” *L'HuffPost*, 14 Sept. 2020, [www.huffpost.it/entry/e-possibile-creare-un-virus-in-laboratorio-senza-lasciare-traccia-la-risposta-dellesperto\\_it\\_5f5f3993c5b62874bc1f7339](https://www.huffpost.it/entry/e-possibile-creare-un-virus-in-laboratorio-senza-lasciare-traccia-la-risposta-dellesperto_it_5f5f3993c5b62874bc1f7339).

<sup>132</sup> *Ibid.*

<sup>133</sup> Jiang, Ren-Di et al. “Pathogenesis of SARS-CoV-2 in Transgenic Mice Expressing Human Angiotensin-Converting Enzyme 2.” *Cell*, 21 May 2020, 182(1): 50-58.e8, <https://dx.doi.org/10.1016%2Fj.cell.2020.05.027>.

<sup>134</sup> Bloom, Jesse D., et. al. “Investigate the origins of COVID-19.” *Science*, 14 May 2021; 372(6543): 694. <https://science.sciencemag.org/content/372/6543/694.1>

In 2017, a dissertation was submitted to the University of Chinese Academy of Sciences by Zeng Leiping, a doctoral student working at the WIV, entitled “Reverse Genetic System of Bat SARS-like Coronaviruses and Function of ORFX.”<sup>135</sup> The referenced reverse genetic system is the same that was used by the WIV in 2016 to create genetically modified viruses and conduct experiments with live viruses under BSL-2 conditions. In his dissertation, Zeng stated the he and other WIV researchers used this system to “construct an S gene chimeric recombinant viral infectious BAC clone with WIV1 as the backbone and without leaving any trace sequences (e.g. incorporated enzymatic sites) in the recombinant viral genome” (emphasis added).

In an end-of-chapter discussion in the dissertation, Zeng reiterates this lack of evidence of genetic manipulation, stating:

We established a reverse genetics system for coronaviruses, and based on the genomic backbone of WIV1, we **established a scheme to replace the S gene without traces**, constructed infectious BAC clones of 12 S-gene chimeric recombinant viruses, and successfully rescued. Four of these recombinant viral strains (including Rs4231, Rs4874, Rs7327, and SHC014) were tested for ACE2 utilization by these strains in humans, civets, and bats.

Zeng was employed at the WIV when he submitted his dissertation, and Shi was his advisor. **As such, it is clear that Shi and others at the WIV not only possessed the capability to genetically modify coronaviruses “without traces,” but were actively doing so in the years leading up to the current pandemic.** It appears Zeng Leiping is currently a postdoctoral research fellow in bioengineering at Stanford University.

#### IV. EVIDENCE OF A LAB LEAK COVER-UP

In addition to the events previously discussed (sequence database taken offline, road closures during the MWG, etc.), there are several additional incidents that suggest the PRC, WIV researchers, and others were actively working to suppress and discredit early conversations that the virus could have been man-made or that it could have leaked from a WIV facility.

In April 2012, six miners working in a copper mine located in Yunnan province of the PRC fell ill. Between the ages of 30 and 63, the workers presented to a hospital in Kunming with “persistent coughs, fevers, head and chest pains and breathing difficulties.”<sup>139</sup> Three of the six eventually died. Researchers from the WIV were asked to investigate and test samples from the sick miners. They also began collecting samples from bats in the cave that housed the mine, which led to the discovery of several new coronaviruses. As a result, the WIV began a long-term study of the mine, collecting samples each year. Despite this, Shi maintains the miners were killed by a fungus growing on bat feces not from a virus.<sup>140</sup>

<sup>135</sup> Leiping, Zeng. *Reverse Genetic System of Bat SARS-like Coronaviruses and Function of ORFX*. 2017. The University of Chinese Academy of Sciences, PhD dissertation. English translation first made available by @TheSeeker268 on Twitter, <https://twitter.com/TheSeeker268/status/1392575597772107776?s=20>

<sup>136</sup> *Ibid.*

<sup>137</sup> *Ibid.*

<sup>138</sup> “Leiping Zeng,” *Stanford*, <https://profiles.stanford.edu/leiping-zeng>

<sup>139</sup> Stanway, David. “Explainer: China's Mojiang Mine and Its Role in the Origins of COVID-19.” *Reuters*, 9 June 2021, [www.reuters.com/business/healthcare-pharmaceuticals/chinas-mojang-mine-its-role-origins-covid-19-2021-06-09/](http://www.reuters.com/business/healthcare-pharmaceuticals/chinas-mojang-mine-its-role-origins-covid-19-2021-06-09/).

<sup>140</sup> Qiu, Jane. “How China's 'Bat Woman' Hunted Down Viruses from SARS to the New Coronavirus.” *Scientific American*, 1 June 2020, [www.scientificamerican.com/article/how-chinas-bat-woman-hunted-down-viruses-from-sars-to-the-new-coronavirus/](http://www.scientificamerican.com/article/how-chinas-bat-woman-hunted-down-viruses-from-sars-to-the-new-coronavirus/)



### ID4991 vs. RaTG13: SARS-CoV-2's "Closest Relative"

A 2016 paper published by PRC researchers (most of whom are affiliated with the WIV) describes these efforts as researchers conducting "surveillance of coronaviruses in bats in an abandoned mineshaft in Mojiang County, Yunnan Province, China, from 2012–2013."<sup>141</sup> Shi and Hu are listed as coauthors. WIV researchers identified two new betacoronaviruses – HiBtCoV/3740-2 and RaBtCoV/4991. The study concluded, "RaBtCoV/4991 showed more divergence from human SARS-CoV than other bat SL-CoVs and could be considered as a new strain of this virus lineage."<sup>142</sup> Shi designed and coordinated the study, drafted the manuscript, and is listed as the corresponding author.

Four years later and after the initial reports of an unknown SARS-like coronavirus in Wuhan, Shi and 28 other PRC scientists submitted an article to *Nature* for publication entitled, "A pneumonia outbreak associated with a new coronavirus of probably bat origin,"<sup>143</sup> on January 20, 2020. It was published in early February. It should be noted that this manuscript was submitted on the same day the PRC's National Health Commission first issued a statement confirming human-to-human transmission – one month after local health officials warned the CCP human-to-human transmissions were occurring.<sup>144</sup> It is highly unlikely Shi and her coauthors would have written this paper the same day they submitted it, meaning they were aware for days or perhaps weeks that the virus was spreading via from human-to-human transmission and did not alert the world. According to a study by researchers at the University of Southampton, implementing appropriate restrictions based on human-to-human transmission just one week before this paper was published would have reduced the number of cases in Wuhan by 66%.<sup>145</sup> This would have made a significant difference in the spread of the virus, especially in conjunction with the significant travel that occurred during the Spring Festival, which ran from January 10 to January 23, 2020, when the city of Wuhan was locked down.

Shi is listed as the corresponding author for the article, which states that COVID-19 "has now progressed to be transmitted by human-to-human contact."<sup>146</sup> The researchers conclude that RaTG13, an allegedly naturally occurring bat coronavirus, is the closest relative to SARS-CoV-2 (emphasis added):

**We then found that a short region of RNA-dependent RNA polymerase (RdRp) from a bat coronavirus (BatCoV RaTG13)—which was previously detected in *Rhinolophus affinis* from Yunnan province—showed high sequence identity to 2019-nCoV. We carried out full-length sequencing on this RNA sample (GISAID accession number EPI\_ISL\_402131). Simplot analysis showed that 2019-nCoV was highly similar throughout the genome to RaTG13 (Fig. 1c), with an overall genome sequence identity of 96.2%. Using the aligned genome sequences of 2019-nCoV, RaTG13, SARS-CoV and previously reported bat SARSr-CoVs, no evidence for recombination events was detected**

<sup>141</sup> Ge, Xing-Yi et al. "Coexistence of multiple coronaviruses in several bat colonies in an abandoned mineshaft." *Virologica Sinica*, 3 Feb. 2016; 31(1): 31-40. <https://dx.doi.org/10.1007%2Fs12250-016-3713-9>

<sup>142</sup> Ibid.

<sup>143</sup> Zhou, P., et al. "A pneumonia outbreak associated with a new coronavirus of probable bat origin." *Nature*, 3 Feb 2020, 579: 270–273. <https://doi.org/10.1038/s41586-020-2012-7>

<sup>144</sup> Wang, Yanan. "Human-to-Human Transmission Confirmed in China Coronavirus." *AP NEWS*, 20 Jan. 2020. <https://apnews.com/14d7dcffa205d9022fa9ea593bb2a8c5>

<sup>145</sup> Lai, Shengjie, et al. "Effect of Non-Pharmaceutical Interventions for Containing the COVID-19 Outbreak in China." *MedRxiv*, 2020, <https://www.medrxiv.org/content/10.1101/2020.03.03.20029843v3>.

<sup>146</sup> Zhou (2020).

in the genome of 2019-nCoV. Phylogenetic analysis of the full-length genome and the gene sequences of RdRp and spike (S) showed that—for all sequences—**RaTG13 is the closest relative of 2019-nCoV and they form a distinct lineage from other SARSr-CoVs** (Fig. 1d and Extended Data Fig. 2)...**The close phylogenetic relationship to RaTG13 provides evidence that 2019-nCoV may have originated in bats.**<sup>147</sup>

A close examination of the paper, and the corrections published months later, reveal inconsistencies in the researchers' claims. Several of the statements made in the above quotation are simply false. After months of criticism and questioning about RaTG13, Shi and the other researchers were forced to publish an addendum on November 17, 2020. **That addendum reveals that RaTG13 was actually ID4991, the sample collected years prior in 2012 or 2013, and that the full-length genomic sequence was obtained in 2018, not in January 2020 as the paper originally stated.**<sup>148</sup>

Unfortunately, no other labs can confirm the genomic sequence of RaTG13 – Shi said in an interview published in *Science Magazine* that the entire sample was used up after genomic sequencing.<sup>149</sup> The inability of outside researchers to verify the genome of RaTG13, and the above efforts to obfuscate when the WIV collected and sequenced RaTG13, raises multiple questions:

- Why leave out of the February 2020 article that the virus sequence was renamed?
- Why lie about when the full-length sequence was obtained?
- Why only issue a correction almost ten months later?
- Why was this sample destroyed via testing when others weren't?

In December 2020, reporters from *BBC News* attempted to visit the cave in Yunnan where RaTG13 was collected. They found themselves followed by plain-clothes police officers and stopped at checkpoints where they were told to stay out of the area.<sup>150</sup> A French publication, *Envoye Special*, produced a video in which they reported conversations with villagers who lived near the mine. According to one of those villagers, the mine was closed and monitored via surveillance cameras. That villager also alleged several people were arrested for venturing too close to the mine.<sup>151</sup>

It is important to note that in March 2020, American, British, and Australian researchers published “The proximal origin of SARS-CoV-2” in *Nature Magazine*.<sup>152</sup> Regarding RaTG13, they found, “Although RaTG13, sampled from a *Rhinolophus affinis* bat, is ~96% identical overall to SARS-CoV-2, its spike diverges in the RBD, which suggests that it may not bind efficiently to human ACE2.” “RBD” is an abbreviation for receptor-binding domain, part of the virus' spike protein. **This is the same part of the virus' genome that Shi, Hu, and other WIV researchers were genetically modifying and replacing as far back as 2015.**<sup>153</sup>

<sup>147</sup> *Ibid.*

<sup>148</sup> Zhou, P., et. al. “Addendum: A pneumonia outbreak associated with a new coronavirus of probable bat origin.” *Nature*, 17 Nov. 2020, 588: E6. <https://doi.org/10.1038/s41586-020-2951-z>

<sup>149</sup> Shi, Zheng-li. “Reply to Science Magazine.” *Science Magazine*, <https://www.sciencemag.org/sites/default/files/Shi%20Zhengli%20Q%26A.pdf>

<sup>150</sup> Sudworth, John. “Covid: Wuhan Scientist Would ‘Welcome’ Visit Probing Lab Leak Theory.” *BBC News*, 21 Dec. 2020, [www.bbc.com/news/world-asia-china-55364445](http://www.bbc.com/news/world-asia-china-55364445).

<sup>151</sup> Asis, Francisco de. “Quite Important the Conversation with Danaoshan Inhabitant.- He Pointed towards the Location We Already Knew for the Mine.- The Roadblocks Are Probably the Diverted Traffic We Already Observed Too.Rest of the Story Is Just Incredible! Pic.twitter.com/kzHz7v5rSg.” *Twitter*, Twitter, 12 Mar. 2021, <https://twitter.com/franciscocodeasis/status/1370183826731888641?s=20>.

<sup>152</sup> Andersen, Kristian G et al. “The proximal origin of SARS-CoV-2.” *Nature Medicine*, 17 March 2022, 26(4):450-452. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7095063/>

<sup>153</sup> *Ibid.*

If SARS-CoV-2 was genetically modified, this could represent a viable model for how. RaTG13's RBD, or full spike protein, could be replaced using the WIV's reverse genetic system. If one of the many unpublished coronaviruses in the WIV's possession was modified, and the resulting chimeric virus was then exposed to hACE2 expressing mice or civets, the resulting virus could become better adapted to infecting humans – just like SARS-CoV-2.

According to scientists – including those working at the WIV – ID4991/RaTG13 is more closely related to SARS-CoV-2 than any other publicly identified virus. It's now clear WIV researchers had this virus as early as 2013, several years before the WIV began genetically modifying other coronaviruses found in the wild. **Given the largest difference between RaTG13 and SARS-CoV-2 is at the spike protein – precisely where the WIV modified various coronaviruses for years – and that WIV researchers renamed the virus and lied about when they sequenced, ID4991/RaTG13 could be a source of genetic material if SARS-CoV-2 was indeed genetically modified.**

According to emails obtained by *Buzzfeed News*, it appears Kristian G. Andersen, the lead and corresponding author of the abovementioned article, initially considered this a viable theory. In a January 31, 2020 email to Dr. Anthony Fauci, the director of NIAID, Andersen stated that parts of the virus were possibly engineered and inconsistent with evolutionary theory:

**From:** Kristian G. Andersen (b) (6) >  
**Sent:** Friday, January 31, 2020 10:32 PM  
**To:** Fauci, Anthony (NIH/NIAID) [E] (b) (6)  
**Cc:** Jeremy Farrar (b) (6) >  
**Subject:** Re: FW: Science: Mining coronavirus genomes for clues to the outbreak's origins

Hi Tony,

Thanks for sharing. Yes, I saw this earlier today and both Eddie and myself are actually quoted in it. It's a great article, but the problem is that our phylogenetic analyses aren't able to answer whether the sequences are unusual at individual residues, except if they are completely off. On a phylogenetic tree the virus looks totally normal and the close clustering with bats suggest that bats serve as the reservoir. The unusual features of the virus make up a really small part of the genome (<0.1%) so one has to look really closely at all the sequences to see that some of the features (potentially) look engineered.

We have a good team lined up to look very critically at this, so we should know much more at the end of the weekend. I should mention that after discussions earlier today, Eddie, Bob, Mike, and myself all find the genome inconsistent with expectations from evolutionary theory. But we have to look at this much more closely and there are still further analyses to be done, so those opinions could still change.

Best,  
 Kristian

154

Fig. 8: Andersen Email Suggesting SARS-CoV-2 was Genetically Modified

The WIV's intentionally misleading February 2020 paper regarding RaTG13 was uploaded as a preprint on January 23rd<sup>155</sup>. Given that Andersen and his coauthors cited it in their March 2020 paper, it is all but certain that Andersen, Dr. Fauci, and the others would have seen it before Andersen sent this email. The day after Anderson emailed Dr. Fauci on February 1, 2020, Dr. Fauci, Andersen, and others debated this issue via teleconference. Previously, they had agreed to keep the debate confidential. Following this discussion, Andersen abandoned his claims that the virus was genetically modified<sup>156</sup>. It is unclear what was said on this call that led to Anderson doing so.

<sup>154</sup> Andersen, Kristian G. Email to Anthony Fauci and Jeremy Farrar. 31 Jan. 2020.

<https://s3.documentcloud.org/documents/20793561/leopold-nih-foia-anthony-fauci-emails.pdf>

<sup>155</sup> Zhou, Peng, et. al. Preprint of "Discovery of a novel coronavirus associated with the recent pneumonia outbreak in humans and its potential bat origin." 23 Jan. 2020, *bioRxiv*, <https://www.biorxiv.org/content/10.1101/2020.01.22.914952v2>

<sup>156</sup> Young, Alison. "I Remember It Very Well": Dr. Fauci Describes a Secret 2020 Meeting to Talk about COVID Origins." *USA Today*, 18 June 2021, [www.usatoday.com/story/opinion/2021/06/17/covid-19-fauci-lab-leaks-wuhan-china-origins/7737494002/](https://www.usatoday.com/story/opinion/2021/06/17/covid-19-fauci-lab-leaks-wuhan-china-origins/7737494002/).

### Additional Cover-Up Activities by Scientists at the WIV

As more investigative work continues on the type of research being conducted at the WIV, CCP censors and WIV researchers have been deleting or scrubbing references to coronavirus research that could be related to the origins of the COVID-19 pandemic. As previously discussed, Ben Hu received a Youth Science Fund Project award to test the pathogenicity of two novel SARS-related coronaviruses beginning in 2019. In some publicly facing PRC websites, Hu's name has now been struck from the grant.

C010802	To study the mechanism of baculovirus Ac34 protein inhibiting the nuclear pathway of mammalian CRM1	Mu Jingfang	Wuhan Institute of Virology, Chinese Academy of Sciences
C010802	Pathogenicity of two new bat SARS-related coronaviruses to transgenic mice expressing human ACE2		Wuhan Institute of Virology, Chinese Academy of Sciences
H1904	Study on the mechanism of enterovirus 71 type 3A protein antagonizing RNAi antiviral immunity	Qiu Yang	Wuhan Institute of Virology, Chinese Academy of Sciences

Fig. 9: Ben Hu's Name Removed From 2019 Grant <sup>157</sup>

Of the almost 80 WIV grants listed in the database, the one awarded to Ben Hu is the only one that does not identify the principal investigator.

A December 12, 2017, interview with Hu was pulled offline after it began circulating on Twitter. In the article, Hu discusses monitoring and collecting samples from the bat cave in Yunnan and his work using the reverse genetic system to insert spike proteins into live coronaviruses. Interestingly, he discusses how Shi Zheng-li "often personally leads the team to take samples." <sup>158</sup> It is likely that this article was pulled down for drawing attention to the cave where RaTG13 was collected.

Similarly, a 2018 article written by Hu and published <sup>159</sup> on the website for the Wuhan Branch of the Chinese Academy of Sciences has also been removed. While the article broadly discusses the work of Shi and other researchers at the WIV, it does not offer any unique insight or evidence of dangerous research. So why was it removed?

<sup>157</sup> 2019 Natural Science Foundation Query and Analysis System. <https://journal.medsci.cn/m/nsfc.do?u=%E4%B8%AD%E5%9B%BD%E7%A7%91%E5%AD%A6%E9%99%A2%E6%AD%A6%E6%B1%89%E7%97%85%E6%AF%92%E7%A0%94%E7%A9%B6%E6%89%80>

<sup>158</sup> "Hunting bat viruses, tracking the origin of SARS, an interview with Dr. Hu Ben, Wuhan Institute of Virology, Chinese Academy of Sciences." *First Author*, 12 Dec. 2017, <https://archive.vn/sVHmq#selection-45.79-45.215>

<sup>159</sup> Hu, Ben. "The Wuhan Institute of Virology's "Research on Chinese Bats Carrying Important Viruses" won the first prize of the 2018 Hubei Provincial Natural Science Award." *Wuhan Branch, Chinese Academy of Sciences*, 13 April 2018, archived: [https://web.archive.org/web/20210107222832/http://whb.ac.cn/xw/kyjz/201811/t20181122\\_5191050.html](https://web.archive.org/web/20210107222832/http://whb.ac.cn/xw/kyjz/201811/t20181122_5191050.html)



Perhaps most incriminating are Shi's repeated lies about activities taking place at the WIV. In August 2020, after the publication of the Committee Minority Staff's interim report, the China Global Television Network interviewed Shi about our work. In the resulting article, Shi denied that Major General Chen Wei took over the BSL-4 lab:

Liu Xin: The report actually went further and said that the lab has been taken over by the Chinese military. It says that Major General Chen Wei has succeeded Yuan Zhiming as the Director of the WIV and Chen Wei is a Chinese military medical sciences expert.

Shi Zhengli: This is a rumor; there is no such thing.

Liu Xin: You absolutely deny that the Chinese military has taken over the WIV.

Shi Zhengli: Yes, it is a rumor.<sup>160</sup>

This is demonstrably false. As previously discussed, posts made on CCP-controlled forums announcing Chen's arrival acknowledged her takeover of the lab. The report stated, "PLA Maj. Gen. Chen Wei has been in Wuhan for more than 10 days. She took over the P4 lab as if it were a 'reassurance pill.'"<sup>161</sup>

During the same interview, and in response to Committee Minority Staff raising questions about a possible lab leak, Shi again lied, claiming that all of the WIV's research has been published and their samples available for review:

Another piece of evidence that I can give you is that our lab has been doing research for 15 years, and all our work has been published. We also have a library of our own genetic sequences, and we have experimental records of all our work related to the virus, which are accessible for people to check.<sup>162</sup>

This, again, is demonstrably false. The WIV's sequence library was taken offline in September 2019 and is not "accessible for people to check." Given the previously discussed undisclosed coronavirus research and military activities at the WIV, it is obvious that not "all" of the WIV's work has been published. Daszak confirmed this in an interview with *Nature*: "we have data that we've gathered over 15 years of working in China — 5 years under a previous grant from the NIH — which haven't been published yet."<sup>163</sup>

In a June 2021 interview, Shi told the *New York Times*, "my lab has never conducted or cooperated in conducting GOF experiments that enhance the virulence of viruses."<sup>164</sup> This is a bizarre claim given the years of published research, often designed and led by Shi, that explicitly sought to make coronaviruses more infectious to humans. In the same interview, Shi lied about WIV researchers falling ill in the fall of 2019 — "The Wuhan Institute of Virology has not come across such cases." This is despite the State Department's January 15th 2021 fact sheet and confirmation from a Dutch virologist on the WHO's investigative team that several researchers were sick.<sup>165</sup>

<sup>160</sup> Xin, Liu. "Exclusive Interview: CGTN's Liu Xin Talks to China's 'Bat Woman'." *CGTN*, 26 Aug. 2020,

<https://news.cgtn.com/news/2020-08-22/Can-politics-be-put-aside-while-looking-for-origins-of-coronavirus--T9HgctyKv6/index.html>.

<sup>161</sup> Guli.

<sup>162</sup> Xin.

<sup>163</sup> Subbaraman, Nidhi. "Heinous!": Coronavirus Researcher Shut down for Wuhan-Lab Link Slams New Funding Restrictions." *Nature News*, 21 Aug. 2020, [www.nature.com/articles/d41586-020-02473-4](http://www.nature.com/articles/d41586-020-02473-4).

<sup>164</sup> Qin, Amy, and Chris Buckley. "A Top Virologist in China, at Center of a Pandemic Storm, Speaks Out." *The New York Times*, 14 June 2021, [www.nytimes.com/2021/06/14/world/asia/china-covid-wuhan-lab-leak.html](http://www.nytimes.com/2021/06/14/world/asia/china-covid-wuhan-lab-leak.html)

<sup>165</sup> Gordon, Michael R., et al. "WSJ News Exclusive | Intelligence on Sick Staff at Wuhan Lab Fuels Debate on Covid-19 Origin." *The Wall Street Journal*, 23 May 2021, [www.wsj.com/articles/intelligence-on-sick-staff-at-wuhan-lab-fuels-debate-on-covid-19-origin-11621796228](http://www.wsj.com/articles/intelligence-on-sick-staff-at-wuhan-lab-fuels-debate-on-covid-19-origin-11621796228).



### Cover-Up Activities by the Chinese Communist Party

According to a WHO internal document from August 2020, the PRC put little effort into determining the source of the SARS-CoV-2 after January 2020:

Following extensive discussions with and presentation from Chinese counterparts, it appears that little had been done in terms of epidemiological investigations around Wuhan since January 2020. The data presented orally gave a few more details than what was presented at the emergency committee meetings in January 2020. No PowerPoint presentations were made and no documents were shared.<sup>166</sup>

Given the large amount of financial resources devoted by the PRC in the years prior for locating, sampling, identifying, and experimenting with coronaviruses, it is odd that little effort would be put into determining the source of the virus, if the source was unknown. In mid-February 2020, the PRC's Ministry of Science and Technology issued new guidelines for laboratory research in the PRC. Official PRC sources stressed:

The mention of biosafety at labs by the ministry has nothing to do with some saying that the coronavirus leaked from the Wuhan Institute of Virology of the Chinese Academy of Sciences.<sup>167</sup>

Experts interviewed in February 2020 by *The Global Times* stated that PRC labs paid "insufficient attention to biological disposal."<sup>168</sup> This included disposing of lab materials into sewage systems.<sup>169</sup>

Given that these new guidelines were issued after the PRC stopped searching for the source of the outbreak, it raises questions as to what prompted the PRC to stop its search.

Shortly thereafter, on February 25, 2020, the Chinese Center for Disease Control and Prevention issued supplementary regulations affecting how PRC scientists work on research related to COVID-19. The guidelines prohibit researchers from sharing data or samples and requires them to receive permission prior to conducting research or publishing the results.

3. No one can, under their own name or in the name of their research team, provide other institutions and individuals with information related to the COVID-19 epidemic on their own, including data, biological specimens, pathogens, culture, etc.

4. Before publishing papers and research results related to the COVID-19 epidemic, you must first report them to the Science and Technology Group/Department for preliminary review, and if necessary, submit it to the Emergency Leading Group or the Department of Science and Education of the National Health Commission for approval.

Papers that have been submitted but not yet reviewed by the Science and Technology Group/Department should be withdrawn as soon as possible and redone according to these regulations.

Fig. 10: Excerpt from China CDC Regulations Issued on February 25th<sup>170</sup>

<sup>166</sup> Kirchgaessner, Stephanie. "China Did 'Little' to Hunt for Covid Origins in Early Months, Says WHO Document." *The Guardian*, 23 Feb. 2021, [www.theguardian.com/world/2021/feb/23/china-did-little-hunt-covid-origins-early-months-says-who-document](https://www.theguardian.com/world/2021/feb/23/china-did-little-hunt-covid-origins-early-months-says-who-document)

<sup>167</sup> Caiyu, Liu, and Leng Shumei. "Biosafety Guideline Issued to Fix Chronic Management Loopholes at Virus Labs." *Global Times*, 16 Feb. 2020, [www.globaltimes.cn/content/1179747.shtml](https://www.globaltimes.cn/content/1179747.shtml).

<sup>168</sup> *Ibid.*

<sup>169</sup> *Ibid.*

A full copy of the regulations is included in the Appendix.

On February 27, 2020, *Health Times*, published remarks from an interview with Yu Chuanhua, who referenced health data from February 25th. Yu is the Vice President of the Hubei Health Statistics and Information Society and Professor of Epidemiology and Health Statistics at Wuhan University, and was running a database of confirmed COVID-19 cases in early 2020. In the interview, Yu stated he had evidence of COVID-19 cases as early as September 2019:

Professor Yu Chuanhua said, “For example, there is data on a patient who became ill on September 29. The data shows that the patient has not undergone nucleic acid testing. The clinical diagnosis (CT diagnosis) is a suspected case. The patient has died. This data has not been confirmed and there is no time to death. It may also be wrong data.” With the research of the database, Professor Yu Chuanhua found more and more case data before December 8. There were two cases in November, and the onset time was November 14 and November 21, 2019. Before December 8, there were also five or six cases. Among them, one patient who became ill at the end of November was hospitalized on December 2 and was clinically diagnosed with pneumonia.<sup>171</sup>

Before the interview was published on February 27th, Yu called the reporter and tried to retract the information regarding the two sick patients in November.<sup>172</sup> It is likely that this was done to comply with the China CDC gag order that was issued two days prior.

Nine days later, on March 5, 2020, the Joint Prevention and Control Mechanism (JPCM) of the State Council Novel Coronavirus Pneumonia Scientific Research Group issued a confidential memo, obtained by the *Associated Press*, entitled, “Notice on the Standardization of the Management and Publication of Novel Coronavirus Scientific Research.”<sup>173</sup> The notice announced the research group was taking control of all publication work related to the pandemic for “coordinated deployment.”<sup>174</sup> It also required units publishing research to notify the JPCM’s propaganda team, which was tasked to work with a special public opinion team to coordinate publication of research with public opinion and “social concerns.”<sup>175</sup>

<sup>170</sup> Chinese Center for Disease Control and Prevention. “On the Supplementary Regulations on Strengthening the Management of Science and Technology During the Emergency Response to the Novel Coronavirus.” 25 Feb. 2020.  
<https://www.documentcloud.org/documents/7340336-China-CDC-Sup-Regs.html>

<sup>171</sup> Wang, Zhenya. “Experts Judge the Source of the New Crown: December 8 Last Year May Not Be the Earliest Time of Onset.” *Health Times*, 27 Feb. 2020, [www.jksb.com.cn/index.php?m=wap&a=show&catid=629&id=160018](http://www.jksb.com.cn/index.php?m=wap&a=show&catid=629&id=160018).

<sup>172</sup> *Ibid.*

<sup>173</sup> Joint Prevention and Control Mechanism of the State Council Novel Coronavirus Pneumonia Scientific Research Group. “Notice on the Standardization of the Management and Publication of Novel Coronavirus Scientific Research.” 3 Mar. 2020.  
<https://www.documentcloud.org/documents/7340337-State-Research-regulations.html>

<sup>174</sup> *Ibid.*

<sup>175</sup> *Ibid.*

Each member work unit of the scientific research team will gather scientific research information within their own unit and systems, review and check the content and form of its publication, and report it to the scientific research team for approval in a timely manner. The scientific research group's dedicated teams of professionals and various experts are responsible for reviewing the publication's content and format and giving expert opinions, and when necessary, arranging expert assessment. After the scientific research group approves, the publishing work unit should, according to work requirements, arrange publication via press conferences, official websites, state social media, news media and other platforms, and notify the propaganda and scientific research teams of the Joint Prevention and Control Mechanism of the State Council. In principle, COVID-19 scientific research should be published first in the form of an official authoritative publication. The special group on public opinion should strengthen communication with the propaganda team, take into account the trend of public opinion and social concerns, and strengthen guidance of the publication of scientific research and information.

*Fig. 11: Excerpt from JPCM Memo*

The memo concludes with a warning: “Those who fail to apply for approval in accordance with the prescribed procedures and publish unconfirmed false information on scientific research, thereby causing serious adverse social impacts, shall be held accountable.”<sup>176</sup> A full copy of the memo is included in the Appendix. These documents are clear evidence of the CCP's effort to restrict research on SARS-CoV-2, so that the only research published supports the Party's official story on the origins and emergence of COVID-19.

After the release of the Committee Minority Staff's interim report on the origins of COVID-19, *China Global Television Network*, a PRC state-owned media outlet, released a propaganda video aimed at undermining this investigation. Entitled, “Clearing up confusion in McCaul report on COVID-19,” the approximately 45-minute video labels the report “misinformation.”<sup>177</sup> It also discusses what they call the “tired old theory that the virus could have leaked from a lab”<sup>178</sup> and reveals that Shi Zheng-li was interviewed about our report. The piece also claims the BSL-4 lab space at the WIV was never taken over by Maj. Gen. Chen Wei.<sup>180</sup> As discussed earlier, this statement is demonstrably untrue.

In June 2021, Jesse Bloom published a preprint entitled, “Recovery of deleted deep sequencing data sheds more light on the early Wuhan SARS-CoV-2 epidemic.” Bloom is a Principal Investigator and Associate Professor for Basic Sciences and the Herbold Computational Biology Program at Fred Hutch, a cancer research center. Bloom was able to recover multiple deleted viral sequences collected from patients in Wuhan in early December 2020. These sequences were originally uploaded to the NIH's Sequence Read Archive by researchers in Wuhan, but later deleted at their request.

<sup>176</sup> *Ibid.*

<sup>177</sup> “The Point: Clearing up Confusion in the McCaul Report On Covid-19.” *CCTV News*, 25 July 2020, [www.youtube.com/watch?v=n5qYogMTZOW](https://www.youtube.com/watch?v=n5qYogMTZOW).

<sup>178</sup> *Ibid.*

<sup>179</sup> *Ibid.*

<sup>180</sup> *Ibid.*

Oddly, these samples more greatly diverge from SARS-CoV-2's bat coronavirus ancestor – “the earliest SARSCoV-2 sequences were collected in Wuhan in December, but these sequences are more distant from RaTG13 than sequences collected in January from other locations in China or even other countries.”<sup>181</sup> Bloom concludes (emphasis added):

**The fact that this informative data set was deleted suggests implications beyond those gleaned directly from the recovered sequences.** Samples from early outpatients in Wuhan are a gold mine for anyone seeking to understand spread of the virus. Even my analysis of 13 partial sequences is revealing, and it clearly would have been more scientifically informative to fully sequence all 34 samples rather than delete the partial sequence data. **There is no obvious scientific reason for the deletion:** the sequences are concordant with the samples described in Wang et al. (2020a,b), there are no corrections to the paper, the paper states human subjects approval was obtained, and the sequencing shows no evidence of plasmid or sample-to-sample contamination.... Even though the sequencing data were on the Google Cloud (as described above) and the mutations were listed in a table in the Small paper by Wang et al. (2020b), **the practical consequence of removing the data from the SRA was that nobody was aware these sequences existed.** Particularly in light of the directive that labs destroy early samples (Pingui 2020) and multiple orders requiring approval of publications on COVID-19 (China CDC 2020; Kang et al. 2020a), **this suggests a less than wholehearted effort to maximize information about viral sequences from early in the Wuhan epidemic.**<sup>182</sup>

The PRC's efforts to obfuscate the origins of COVID-19 were not limited to destroying samples and silencing doctors, but featured a sustained disinformation campaign as well. As discussed in our previous report, Lijian Zhao, an official within the PRC's Foreign Ministry, shared an article on Twitter that claimed the virus was brought to the PRC by the U.S. military.<sup>183</sup> The article was from the *Global Times* research.ca, a website that pushes pro-Putin propaganda and has reported ties to Russian state media.<sup>184</sup> His tweet was amplified by the Chinese Embassy in South Africa.<sup>185</sup>

<sup>181</sup> Bloom, Jesse D. Preprint: “Recovery of deleted deep sequencing data sheds more light on the early Wuhan SARS-CoV-2 epidemic.” *bioRxiv*, 29 June 2021, <https://www.biorxiv.org/content/10.1101/2021.06.18.449051v2>

<sup>182</sup> *Ibid.*

<sup>183</sup> Zhao, Lijian. “This Article Is Very Much Important to Each and Every One of Us. Please Read and Retweet It. COVID-19: Further Evidence That the Virus Originated in the US. <https://t.co/LPanIo40MR>.” *Twitter*, 13 Mar. 2020, [www.twitter.com/zlj517/status/1238269193427906560](https://www.twitter.com/zlj517/status/1238269193427906560)

<sup>184</sup> Thomas, Elise, and Aspi. “Chinese Diplomats and Western Fringe Media Outlets Push the Same Coronavirus Conspiracies.” *The Strategist*, 30 Mar. 2020, [www.aspistrategist.org.au/chinese-diplomats-and-western-fringe-media-outlets-push-the-same-coronavirus-conspiracies/](http://www.aspistrategist.org.au/chinese-diplomats-and-western-fringe-media-outlets-push-the-same-coronavirus-conspiracies/).

<sup>185</sup> Chinese Embassy in South Africa. “More Evidence Suggests That the Virus Was Not Originated at the Seafood Market in Wuhan at All, Not to Mention the so Called ‘Made in China’.” <https://t.co/8cRxsZB3z>.” *Twitter*, 16 Mar. 2020, [www.twitter.com/ChineseEmbSA/status/1239453193689587712](https://www.twitter.com/ChineseEmbSA/status/1239453193689587712)





Fig. 12: PRC Spokesman Tweet Suggesting COVID-19 Arrived in Wuhan via the Military World Games

To further drive this narrative, CCP-controlled media outlets accused Maatje Benassi, a member of the U.S. Army Reserve, as being “patient zero.” Benassi competed at the Military World Games without becoming ill, yet has been repeatedly targeted for harassment. Videos pushing the theory have been uploaded to WeChat, Weibo, and Xigua – PRC based sites. Two weeks after Zhao tweeted that the U.S. army brought the virus to Wuhan, the *Global Times* amplified the narrative, urging the U.S. government to release athletes’ health info and repeated the claim about Benassi.<sup>186</sup>

Another tweet by Zhao actually suggests the pandemic did start in September, as is suggested in this addendum, but that it began in the United States.<sup>187</sup>

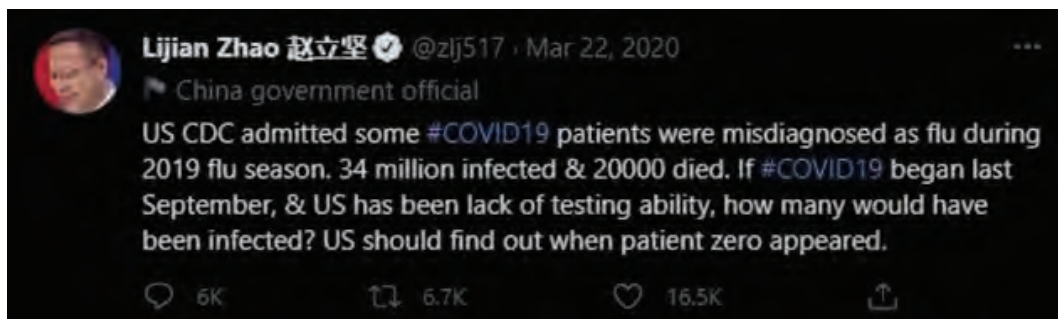


Fig. 13: PRC Spokesman Tweet Suggesting the COVID-19 Pandemic Started in September 2019.

<sup>186</sup> Shumei, Leng, and Wan Lin. “US Urged to Release Health Info of Military Athletes Who Came to Wuhan in October 2019.” *Global Times*, 25 Mar. 2020, [www.globaltimes.cn/content/1183658.shtml](http://www.globaltimes.cn/content/1183658.shtml).

<sup>187</sup> Zhao, Lijian. *US CDC Admitted Some #COVID19 Patients Were Misdiagnosed as Flu during 2019 Flu Season. 34 Million Infected & 20000 Died. If #COVID19 Began Last September, & US Has Been Lack of Testing Ability, How Many Would Have Been Infected? US Should Find out When Patient Zero Appeared.* Twitter, 22 Mar. 2020, <https://twitter.com/zlj517/status/1241723635964039168?s=20>.



It is important to note that this tweet was sent in March 2020. The previously discussed Harvard study suggesting the pandemic began in September was not published until the second half of 2020. This accusation came ten days after Zhao repeated his theory that the U.S. military brought COVID-19 to Wuhan. If the CCP realized an investigation would show an uptick in visits of patients with symptoms similar to COVID-19 in September, October, and November of 2019, this would likely be the actions they would take to coverup the source of those illnesses.

### WIV Disinformation Campaign Involving Peter Daszak

As we have previously explained, Peter Daszak was heavily involved in the gain-of-function research taking place at the WIV, including research that was done at BSL-2 levels and that was done while the United States had a moratorium in place on funding gain-of-function research. In addition, we have uncovered strong evidence that suggests Peter Daszak is the public face of a CCP disinformation campaign designed to suppress public discussion about a potential lab leak. Emails obtained by a third-party organization show that Daszak organized a February 19, 2020, statement in the *Lancet* “condemn[ing] conspiracy theories suggesting that COVID-19 does not have a natural origin.”<sup>188</sup> The statement continued, “Conspiracy theories do nothing but create fear, rumours, and prejudice that jeopardise our global collaboration in the fight against this virus.”<sup>189</sup> The emails show Daszak’s effort to organize a large group of scientists to sign onto a statement that he personally drafted. One email concludes with Daszak stating, “Please note that this statement will not have EcoHealth Alliance logo on it and will not be identifiable as coming from any one organization or person, the idea is to have this as a community supporting our colleagues.”<sup>190</sup>

The emails, sent from Daszak’s EcoHealth Alliance email account, also reveal the statement was drafted in response to a request by WIV researchers with whom Daszak had worked (emphasis added):

You should know that the conspiracy theorists have been very active, targeting our collaborators with some extremely unpleasant web pages in China, and some have now received death threats to themselves and their families. **They have asked for any show of support we can give them.**<sup>191</sup>

In a separate email, Daszak states that Linfa Wang (who did not sign the statement) pushed for Daszak and Baric to not sign the statement, effectively hiding their involvement. As previously discussed, Linfa Wang, who is copied on several other emails about the statement, was a coauthor of multiple Daszak/Shi/Hu papers. Wang is currently the Director and Professor of the Program in Emerging Infectious Diseases at the Duke-NUS Graduate Medical School in Singapore. He is a PRC national who received his B.S. in biochemistry from the East China Normal University in Shanghai, PRC<sup>192</sup> before completing a Ph.D. in molecular biology at the University of California, Davis in the United States.

<sup>188</sup> Calisher, Charles et al. “Statement in support of the scientists, public health professionals, and medical professionals of China combatting COVID-19.” *Lancet*, 7 Mar. 2020, 395(10226): e42-e43. <https://pubmed.ncbi.nlm.nih.gov/32087122/>

<sup>189</sup> *Ibid.*

<sup>190</sup> Daszak, Peter. Email to Linda Saif, Hume Field, JM Hughe, Rita Colweel, Alison Andrew, Aleksei Chmura, Hongying Li, William B. Karesh, and Robert Kessler. 6 Feb. 2020. [https://usrtk.org/wp-content/uploads/2020/11/The\\_Lancet\\_Emails\\_Daszak-2.6.20.pdf](https://usrtk.org/wp-content/uploads/2020/11/The_Lancet_Emails_Daszak-2.6.20.pdf)

<sup>191</sup> Daszak, Peter. Email to Rita Colwell. 8 Feb. 2020. [https://usrtk.org/wp-content/uploads/2020/11/The\\_Lancet\\_Emails\\_Daszak-2.8.20.pdf](https://usrtk.org/wp-content/uploads/2020/11/The_Lancet_Emails_Daszak-2.8.20.pdf)

<sup>192</sup> Wang, Linfa. “Curriculum Vitae.” [https://globalhealth.duke.edu/sites/default/files/cv/cv-linfa\\_wang-jan2017.pdf](https://globalhealth.duke.edu/sites/default/files/cv/cv-linfa_wang-jan2017.pdf)

In January 2020, Wang was at the WIV in Wuhan, visiting researchers he worked with. Given his previous publications, this likely included a visit with Hu and Shi, with whom he has authored dozens of papers. He departed the city on January 18th,<sup>192</sup> less than three weeks before Daszak externally circulated his draft *Lancet* statement. Wang is included on the email soliciting cosigners.<sup>193</sup>

In the email, Daszak states, (emphasis added):

I spoke with Linfa last night about the statement we sent round. He thinks, and I agree with him, that **you, me and him should not sign this statement, so it has some distance from us** and therefore doesn't work in a counterproductive way... **We'll then put it out in a way that doesn't link it back to our collaboration so we maximize an independent voice.**<sup>194</sup>

Copies of these emails are included in the Appendix.

**While pushing for Daszak and Baric, the WIV's most prominent American collaborators, to hide their efforts to organize this statement, Wang was serving as the Chair of the Scientific Advisory Board for the Center for Emerging Diseases at the Wuhan Institute of Virology, of which Shi Zheng-li is the Director.**<sup>195</sup>

Baric agreed and chose not to sign. It is unclear why Daszak ultimately changed his mind and signed the statement. Despite Daszak's role as the organizer of the *Lancet* statement, Charles Calisher is listed as the corresponding author. Oddly, the email address listed for Calisher is a generic one (COVID19statement@gmail.com)<sup>196</sup> that appears to have been created specifically for this statement, an unusual practice for scientific publications.

The February 2021 *Lancet* statement declared the authors had “no competing interest,” despite Daszak organizing the letter on behalf of WIV researchers who he funded and with whom he collaborated. In June 2020, after public concerns regarding Daszak's connection to the WIV, “the *Lancet* invited the 27 authors of the letter to re-evaluate their competing interests.”<sup>197</sup> **Daszak submitted a revised disclosure statement which, while transparent about his prior work with PRC researchers, fails to reference the WIV or disclose that he drafted the statement at the request of PRC researchers.**<sup>198</sup>

The emails also reveal that Daszak helped edit a letter sent on February 6, 2020 by the Presidents of the U.S. National Academies of Sciences, Engineering, and Medicine to the White House Office of Science and Technology Policy regarding the origins of COVID-19.

<sup>192</sup> Kupferschmidt, Kai. “This Biologist Helped Trace SARS to Bats. Now, He's Working to Uncover the Origins of COVID-19.” *Science*, 9 Sept. 2020, [www.sciencemag.org/news/2020/09/biologist-helped-trace-sars-bats-now-hes-working-uncover-origins-covid-19](http://www.sciencemag.org/news/2020/09/biologist-helped-trace-sars-bats-now-hes-working-uncover-origins-covid-19).

<sup>193</sup> Daszak (6 Feb.)

<sup>194</sup> Daszak, Peter. Email to Ralph Baric, Toni Baric, Alison Andre, and Aleksei Chmura. 6 Feb. 2020. [https://usrtk.org/wp-content/uploads/2021/02/Baric\\_Daszak\\_email.pdf](https://usrtk.org/wp-content/uploads/2021/02/Baric_Daszak_email.pdf)

<sup>195</sup> Wang.

<sup>196</sup> Calisher.

<sup>197</sup> Editors of The Lancet. “Addendum: competing interests and the origins of SARS-CoV-2.” *The Lancet*, 26 June 2021, 397: 2449-50. [https://www.thelancet.com/action/showPdf?pii=S0140-6736\(2021\)00137-5](https://www.thelancet.com/action/showPdf?pii=S0140-6736(2021)00137-5)

<sup>198</sup> *Ibid.*

<sup>199</sup> McNutt, Marcia, et al. “NASEM Response to OSTP Re Coronavirus\_February 6, 2020.” Received by Kelvin Droegemeier, National Academies of Science, Engineering, and Medicine, 6 Feb. 2020, Washington, District of Columbia. [https://www.nationalacademies.org/documents/link/LDA8FF8BAB7F1D4A98AC250C7916649E610A15AD51C6/fileview/DA215521A660F40FD8D752FFB82A8E21FA8D3C29976D/NASEM%20Response%20to%20OSTP%20re%20Coronavirus\\_February%206%2C%202020.pdf?hide=thumbs+breadcrumbs+favs+props+nextprev+sidebar+pin+actions&scheme=light&fitwidth](https://www.nationalacademies.org/documents/link/LDA8FF8BAB7F1D4A98AC250C7916649E610A15AD51C6/fileview/DA215521A660F40FD8D752FFB82A8E21FA8D3C29976D/NASEM%20Response%20to%20OSTP%20re%20Coronavirus_February%206%2C%202020.pdf?hide=thumbs+breadcrumbs+favs+props+nextprev+sidebar+pin+actions&scheme=light&fitwidth)

While not included in the final version, the last draft edited by Daszak and the other experts who were consulted included a line stating, “The initial views of the experts is that the available genomic data are consistent with natural evolution and that there is currently no evidence that the virus was engineered to spread more quickly among humans.” Daszak actually pushed for broader language, as he believed “this is a bit too specific, because there are other conspiracy theories out there.” It is unclear why the sentence was removed by the Presidents of the U.S. National Academies before the letter was sent to the White House. Daszak specifically sought to time the publication of his statement in *The Lancet* for after this letter was released. And the statement references the letter as proof of the virus’ natural origin, without disclosing that Daszak helped edit it. It is highly likely that senior government officials, including Dr. Fauci, would have seen both the letter from the U.S. National Academies of Sciences, Engineering, and Medicine and the statement published in *The Lancet*, shaping their opinion and stifling debate within the U.S. federal government regarding the origins of COVID-19.

Sixteen months after sending this initial letter, the Presidents of the U.S. National Academies of Sciences, Engineering, and Medicine released an updated statement on June 15, 2021, titled, “Let Scientific Evidence Determine Origin of SARS-CoV-2, Urge Presidents of the National Academies.”<sup>199</sup> This updated statement acknowledges there are scenarios that the origin of the pandemic could have resulted from a lab leak, stating (emphasis added):

However, misinformation, unsubstantiated claims, and personal attacks on scientists surrounding the different theories of how the virus emerged are unacceptable, and are sowing public confusion and risk undermining the public’s trust in science and scientists, including those still leading efforts to bring the pandemic under control... In the case of SARS-CoV-2, there are multiple scenarios that could, in principle, explain its origin with varying degrees of plausibility based on our current understanding. **These scenarios range from natural zoonotic spillover (when a virus spreads from non-human animals to humans) to those that are associated with laboratory work.**<sup>200</sup>

Unlike the letter to the White House, this statement does not state which, if any, outside experts were consulted when drafting the statement.

Interestingly, three weeks later, in July 2021, Daszak and his colleagues released an update to their February 2020 statement with a very similar title: “Science, not speculation, is essential to determine how SARS-CoV-2 reached humans.” The second statement was signed by 24 of the original 27 authors and reflects a major step back from those authors’ original position (emphasis added):

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<sup>200</sup> *Ibid.*

Interestingly, three weeks later, in July 2021, Daszak and his colleagues released an update to their February 2020 statement with a very similar title: “Science, not speculation, is essential to determine how SARS-CoV-2 reached humans.” The second statement was signed by 24 of the original 27 authors and reflects a major step back from those authors’ original position (emphasis added):

**The second intent of our original Correspondence was to express our working view that SARS-CoV-2 most likely originated in nature and not in a laboratory,** on the basis of early genetic analysis of the new virus and well-established evidence from previous emerging infectious diseases, including the coronaviruses that cause the common cold as well as the original SARS-CoV and MERS-CoV. **Opinions, however, are neither data nor conclusions.** Evidence obtained using the scientific method must<sup>201</sup> inform our understanding and be the basis for interpretation of the available information.

This is quite different from Daszak’s words in the first border-line propaganda statement “condemn[ing] conspiracy theories suggesting that COVID-19 does not have a natural origin.”<sup>202</sup>

Despite this softening, the authors continue to accuse those who seek to investigate the lab leak hypothesis of being the source of the PRC’s unwillingness to cooperate with an international investigation:

Allegations and conjecture are of no help, as they do not facilitate access to information and objective assessment of the pathway from a bat virus to a human pathogen that might help to prevent a future pandemic. Recrimination has not, and will not, encourage international cooperation and collaboration.<sup>203</sup>

Whereas the first statement cited the letter from the Presidents of the U.S. National Academies of Sciences, Engineering, and Medicine (which Daszak helped edit), the second cites the Presidents’ statement released just weeks prior. This raises the question of whether Daszak, or any of the authors, assisted in drafting or editing the June 15th statement issued by the National Academies.

It should also be noted that Daszak was the only representative of the United States on the WHO-China Joint Study team in early 2021. The United States put forth a list of experts to be considered, none of whom were chosen. Daszak was not on that list but was nevertheless selected and approved by the CCP.<sup>204</sup> The annexes of the WHO’s report on the origins of COVID-19, issued in March 2021, include multiple examples of CCP disinformation that have been repeated by Daszak. This includes a discussion of “conspiracy theories,”<sup>205</sup> which include the lab leak hypothesis and questions regarding the possible genetically modified nature of SARS-CoV-2. It also<sup>206</sup> refers to the WIV’s sequence database that was taken offline as a “rumour about missing data.” This is similar language to that which Daszak used during his Chatham House interview – despite the database remaining offline.<sup>207</sup> Committee Minority Staff was unable to determine whether Daszak assisted in the drafting or editing of the WHO report.

201 Calisher, Charles H et al. “Science, not speculation, is essential to determine how SARS-CoV-2 reached humans.” *Lancet*, 5 July 2021, 398:209-211. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8257054/>

202 Calisher (Feb.)

203 Calisher (July)

204 Testimony from former senior U.S. official received by Committee Minority Staff.

205 Joint Report - ANNEXES.

206 *Ibid.*

207 *Ibid.*

Peter Daszak has taken several additional concerning actions in regard to the origins of COVID-19, including inexplicably lying about the work conducted by EcoHealth Alliance in the months following the emergence of SARS-CoV-2. In an August 21, 2020, interview with *Nature*, after the NIH suspended the grants he was using to fund research at the WIV, Daszak claimed “The grant isn’t used to fund work on SARS-CoV-2. Our organization has not actually published any data on SARS-CoV-2.”<sup>208</sup> This is despite the fact that four days later Nature Communications published “Origin and cross-species transmission of bat coronaviruses in China.”<sup>209</sup> Daszak, Shi, Hu, and Wang are all listed as authors, with Shi and Daszak both being listed as corresponding authors. The preprint for the article was uploaded on May 31, 2020, almost three months before Daszak’s interview with *Nature*. The paper includes a<sup>210</sup> phylogenetic analysis “suggesting a likely origin for SARS-CoV-2 in *Rhinolophus* spp. bats.” Daszak, Shi, three EcoHealth Alliance affiliated researchers, and Linfa Wang are credited with designing the study, conducting fieldwork, and establishing collection and testing protocols.

The research was funded by the NIH (grant no. R01AI110964) and USAID’s PREDICT project (cooperative agreement number GHN-A-OO-09-00010-00), as well as the Strategic Priority Research Program of the Chinese Academy of Sciences (grant no. XDB29010101) that Shi was directing. It also received support from the National Natural Science Foundation of China (grants no. 31770175 and 31830096). The paper notes:

All work conducted by EcoHealth Alliance staff after April 24th 2020 was supported by generous funding from The Samuel Freeman Charitable Trust, Pamela Thye, The Wallace Fund, & an Anonymous Donor c/o Schwab Charitable.<sup>211</sup>

April 24th was the day the NIH terminated the project Understanding the Risk of Bat Coronavirus Emergence, which was funded under grant R01AI110964,<sup>212</sup> which is cited in the paper as funding this work.<sup>213</sup> The grant Daszak told Nature was not being used to fund work on SARS-CoV-2 is cited in a paper presenting research on SARS-CoV-2.

Earlier, in March 2020, Peter Daszak and two other EcoHealth Alliance affiliated researchers published “A strategy to prevent future epidemics similar to the 2019-nCoV outbreak.”<sup>214</sup> While the paper lacked lab experimentation, it discussed SARS-CoV-2 and claimed that “wildlife trade has clearly played a role in the emergence of”<sup>215</sup> the virus. This work was also funded by the same NIH grant (grant no. R01AI110964), as well as the same cooperative agreement with USAID’s PREDICT Project.

In December 2020, Daszak stated in a tweet that the suspension of the aforementioned NIH grant directly prevented him from accessing samples at the WIV. If the grant did not support EcoHealth Alliance’s work on SARS-CoV-2, how could it be related to their inability to access SARS-CoV-2 samples?

208 Subbaraman.

209 Latinne, Alice et al. “Origin and cross-species transmission of bat coronaviruses in China.” *Nature Communications*, 25 Aug. 2020, 11(1):4235, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7447761/>

210 *Ibid.*

211 *Ibid.*

212 Lauer, Michael. Email to Peter Daszak. 24 April 2020.

<https://www.sciencemag.org/sites/default/files/Lauer.Daszak.NIH%20grant%20killed.partial%20email%20transcripts.April%202020.pdf>

213 Latinne

214 Daszak, Peter et al. “A strategy to prevent future epidemics similar to the 2019-nCoV outbreak.” *Biosafety and Health*, March 2020, 2(1): 6-8. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7144510/>

215 *Ibid.*



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Why did Daszak claim the NIH grant “isn’t used to fund work on SARS-CoV-2” when his own published research and statements show that it was?

Another concerning example of Daszak’s behavior comes from a March 10, 2021 discussion with Chatham House. In response to a question about the WIV taking down its viral sequence and sample database in September 2019 and whether the WHO investigative team requested to see the data, Peter Daszak stated (emphasis added):

I asked the question in front of the whole team, both sides, while we were at the Wuhan Institute of Virology, about the **so-called missing database**. And what we were told, by Shi Zheng-li, was that there had been hacking attempts on it, about 3,000 hacking attempts, and they took down this excel spreadsheet-based database. Absolutely reasonable. **We did not ask to see the data**, and as you know, a lot of this work is work that has been conducted with EcoHealth Alliance, and I’m also part of those data, and **we do basically know what’s in those databanks**. And I shared, **I gave a talk to both sides about the work we’ve done with the Wuhan Institute of Virology and explained what’s there. There is no evidence of viruses closer to SARS-CoV-2 than RaTG13 in those databases. It’s as simple as that.**<sup>217</sup>

This is a stunning claim given the database contained more than 22,000 samples and was inaccessible by anyone outside of the WIV after September 2019. It was physically impossible for Daszak to remotely access the database after the SARS-CoV-2 genome was released in January 2020 in order to compare the genome to samples in the database. **If not, given that no one outside of the WIV knew RaTG13 was closely related to SARS-CoV-2 prior to publication in February 2020, how could Daszak claim to know there is not a closer match in one of the 22,000 plus samples when he could not access the data? This raises the question of whether he has copy of the database.**

Daszak has also been, at best, incorrect about how the WIV handed RaTG13. In an April 21, 2020 interview with the *New York Times*, he stated (emphasis added):

We found the closest relative to the current SARS-CoV-2 in a bat in China in 2013. **We sequenced a bit of the genome, and then it went in the freezer**; because it didn’t look like SARS, we thought it was at a lower risk of emerging. With the Virome project, we could have sequenced the whole genome, discovered that it binds to human cells and upgraded the risk. And maybe then when we were designing vaccines for SARS, those could have targeted this one too, and we would have had something in the freezer ready to go if it emerged.<sup>218</sup>

This is, of course, untrue. Researchers at the WIV fully sequenced RaTG13’s genome in 2018.<sup>219</sup> Either Daszak knew this was untrue, and lied to the *New York Times*, or he was being kept in the dark about the work being conducted at the WIV. If the later is true, it raises more questions about Daszak’s March 2021 claim to know everything in the WIV’s database that was taken offline.

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<sup>216</sup> Subbaraman.

<sup>217</sup> “Sustaining the Response: Inside the WHO-China Mission.” *Chatham House*, 10 March 2021, <https://www.youtube.com/watch?v=GMIIIEF58944&t=3249s>.

<sup>218</sup> Kahn, Jennifer. “How Scientists Could Stop the Next Pandemic Before It Starts.” *The New York Times*, 21 Apr. 2020, [www.nytimes.com/2020/04/21/magazine/pandemic-vaccine.html](https://www.nytimes.com/2020/04/21/magazine/pandemic-vaccine.html).

<sup>219</sup> Zhou, (Nov. 2020).

## V. HYPOTHESIS: A LAB LEAK THAT CAUSED A PANDEMIC

Having examined the evidenced discussed in this addendum, Committee Minority Staff has put together the following hypothesis that could reasonably represent what could have occurred in the early months of the COVID-19 pandemic.

In the months leading up to an accidental release of SARS-CoV-2, the hazardous waste treatment system at the WNBL was undergoing renovation. The central air conditioning system at one of the facilities needed to be renovated, which likely resulted in lower than ideal air circulation and enabling viral particles to remain suspended in the air longer. After the July 4, 2019 notice from the Ministry of Science and Technology, and prior to the September 30th deadline, researchers at the WIV were reviewing samples collected under grant 2013FY113500, held by Yuan Zhiming, the Director of the WNBL BSL-4.<sup>220</sup>

This is the same grant which funded:

- The 2013 paper reporting the first isolation of a live SARS-like coronavirus after sampling at the cave in Kunming.<sup>221</sup>
- The 2014 paper, which was the result of collecting 986 samples from 39 species of small mammals in Guangxi and Yunnan provinces.
- The 2016 paper, where a second live coronavirus was successfully isolated.
- The 2017 paper, where a third live SARS-like coronavirus was isolated and WIV researchers created eight chimeric coronaviruses with altered spike proteins.

Hu, Shi, and others at the WIV were actively testing novel and genetically manipulated coronaviruses against hACE2 expressing mice and civets at BSL-2 and BSL-3 conditions, including viruses collected from the cave in Yunnan where the miners fell ill. A defective hazardous waste treatment system and central air conditioning system would increase the likelihood of a lab employee (or several) becoming infected with SARS-CoV-2, as viral particles would be more likely to remain in the air for longer periods of time. As previously discussed, the WIV provides a shuttle for employees, transporting individuals from near the old WIV facility in Wuchang to the WNBL and back. The infected employees (whether from the WNBL or the WIV Headquarters) then traveled throughout central Wuhan, likely by the metro, spreading the virus.

In early September, it became known that an accidental release occurred. Initially, not knowing SARS-CoV-2 spreads via human-to-human transmission or that asymptomatic people are responsible for a large number of new cases, concern was low. Concern was additionally tempered by the knowledge that previous accidental releases from labs resulted in only a small number of infections. Still, measures are ordered in response. At midnight local time on the morning of September 12th, the Wuhan University, which sits less than a mile from the WIV Headquarters and whose medical school houses a BSL-3 lab accredited to experiment on animals,<sup>222</sup> issues a notice for laboratory inspections in late September.<sup>223</sup> It is likely that officials issued similar orders to other labs in the area. Between two and three hours later, the WIV's viral sequence database is taken offline in the middle of the night.<sup>224</sup>

Roughly 17 hours later, at 7:09 p.m. local time, the WIV publishes a procurement announcement for "security services" at the WNBL, to include gatekeepers, guards, video surveillance, security patrols, and people to handle the "registration and reception of foreign personnel."<sup>225</sup> The budget provided was in excess of \$1.2 million.<sup>226</sup>

In order to prevent national embarrassment, the decision was made to allow the 2019 Military World Games to continue. No spectators were allowed to attend the games, but international athletes and some of the 236,000 volunteers still become infected, spreading the virus in the city. Dozens of athletes fall ill with symptoms. Since COVID-19 can infect humans without causing symptoms, an untold number of athletes and volunteers become infected, but are asymptomatic and unaware they are infectious.

The athletes return to their home countries in late October, carrying SARS-CoV-2 across the world. Just as was the case in 2002 with SARS,<sup>227</sup> the CCP sought to hide the outbreak, wasting precious time that could have been used to prevent the global pandemic. By the time the world was alerted to the virus spreading in Wuhan, it had already begun to spread around the world.

In December, as cases begin to overload local hospitals, it became impossible to hide the outbreak. At some point in late 2019, Major General Chen Wei is brought in to take over the BSL-4 lab at the WNBL and lead the response efforts. The Wuhan Branch of the China CDC set a case definition for COVID-19 that only included those who have visited the Huanan Seafood Market, meaning that only people who had a link to the market were identified as having COVID-19. This further obscured the true origins of the virus.

Linfa Wang, a scientist with ties to the WIV and who has worked with Shi, Hu, and Daszak on the genetic modification of coronaviruses, was in Wuhan in early January 2020. While there he visited the WIV and likely met with Shi, Hu, and others. Sometime after his departure on January 18th and before February 6th, WIV researchers asked Peter Daszak to organize a public statement suppressing debate regarding the lab as the origin of SARS-CoV-2. On January 20th, WIV researchers submitted the February 2020 article where ID4991 was renamed as RaTG13 and which contained false information about when the genomic sequence for the virus was obtained.

At 12:43am on February 6th, Daszak sent the draft statement to Wang, Baric, and others asking them to join as cosigners. Sometime before Daszak went to bed that night, Wang called him and requested that he, Daszak, and Baric not sign the statement in order to obfuscate their connections to the WIV. Baric agreed, and neither him nor Wang signed the statement. The statement was published on February 19th, declaring discussion of a lab leak a conspiracy theory, and suppressing public debate on the origins of COVID-19.

220 "Notice of the Resource Allocation and Management Department of the Basic Research Department of the Ministry of Science and Technology on the Comprehensive Performance Evaluation of Special Projects of Basic Science and Technology Work." *Ministry of Science and Technology*, 4 July 2019, <https://archive.is/pIwh4#selection-703.7-711.34>

221 Ge.

222 "About Wuhan University School of Medicine (WUSM)." *Wuhan University School of Medicine*, 23 Apr. 2013, [https://wsm70.whu.edu.cn/English\\_Site/About.htm](https://wsm70.whu.edu.cn/English_Site/About.htm)

223 "Notice on the implementation of laboratory safety inspections in 2019." *Wuhan University*, <http://simlab.whu.edu.cn/info/1107/1018.htm>

224 "Status breakdown of the database of characteristic wild animals carrying virus pathogens (September 2019)." *Scientific Database Service Monitoring & Statistics System*. <https://archive.is/AGtFv#selection-1553.0-1567.2>

225 "Competitive consultation on the procurement project of security services in Zhengdian Science Park, Wuhan Institute of Virology, Chinese Academy of Sciences." *China Government Procurement Network*, 12 Sept. 2019, [https://web.archive.org/web/20210716170719/http://www.ccgp.gov.cn/cggg/dfgg/jzxc/201909/t20190912\\_12900712.htm](https://web.archive.org/web/20210716170719/http://www.ccgp.gov.cn/cggg/dfgg/jzxc/201909/t20190912_12900712.htm)

226 *Ibid.*

227 Epstein, Gady A. "Chinese Admit to SARS Mistakes." *Baltimoresun.com*, Baltimore Sun, 1 Apr. 2003, [www.baltimoresun.com/bal-te.sars21apr21-story.html](http://www.baltimoresun.com/bal-te.sars21apr21-story.html).

## V. RECOMMENDATIONS

In the previously issued report, Committee Minority Staff provided several recommendations for actions to be taken by the United States in response to COVID-19, including seeking new leadership at the WHO, pursuing Taiwan's re-admittance to the WHO as an observer, engaging in an international investigation with likeminded WHO Member States regarding the early stages of COVID-19, and supporting concrete reforms to the International Health Regulations. These recommendations remain relevant.

In response to the new information laid out in this addendum, there are additional steps that can be taken by the Committee, Congress more broadly, and the Executive Branch on this issue. Given the previously detailed inconsistencies and CCP disinformation campaign regarding a possible lab leak, Peter Daszak must be subpoenaed to appear before the House Foreign Affairs Committee and Senate Foreign Relations Committee as material witness to this investigation. Committee Minority Staff attempted, on multiple occasions, to contact Daszak with a list of questions relevant to this report. He never responded. In contrast, Ralph Baric provided answers to a list of questions from Committee Minority Staff. His assistance was appreciated, and we believe his testimony would also be useful. Daszak and Baric should provide expert testimony, including but not limited to the following questions:

- What was the extent of genetic manipulation of coronaviruses and their testing against human immune systems at the WIV in 2018 and 2019?
- Who requested the statement of support published in the *Lancet*?
- Did this request include labeling discussion of a possible lab leak as a conspiracy theory?
- What was the nature and content of Wang's call to Daszak in the early hours of February 6th, 2020?
- Why did Daszak make conflicting, and apparently false, statements regarding the NIH grant terminated in 2020?
- How could Daszak confirm RaTG13 is the closest match to SARS-CoV-2 in the WIV's database if it was taken offline in September 2019?
- Does Daszak have a copy of the WIV's database that was taken offline?
- Who put forth Daszak's name to join the joint WHO-China investigative team?
- Was Daszak aware the funding he was providing directly supported gain-of-function research by paying for the collection of viruses the WIV later experimented with, even though the federal government had a moratorium on such research from 2014 through 2017?
- Do they believe SARS-CoV-2 could possibly be a genetically modified virus created via a system similar to Baric's "no-see-um" method and the system used by WIV researchers in 2016, thus leaving no evidence of manipulation?

Committee Minority Staff also recommends Congress pursue legislation to implement the following restrictions and sanctions in response to the pandemic:

- Institute a ban on conducting and funding any work that includes gain-of-function research until an international and legally binding standard is set, and only where that standard is verifiably being followed.
- Authorize and fund a public-private partnership for pandemic prevention, warning, and early detection.

- Sanction the Chinese Academy of Sciences and affiliated entities.
- List the Wuhan Institute of Virology and its leadership on the Specially Designated Nationals and Blocked Persons List and apply additional, appropriate secondary sanctions.
- Expand statutory and administrative sanctions regimes to curb the abuse of dual-use technology.
- Authorize new sanctions for academic, governmental, and military bioresearch facilities that fail to ensure the appropriate levels of safety and information sharing.
- Review all H-2B visas of Chinese nationals engaged in biological, chemical, or related research in the United States for possible revocation.
- Review all student visas of Chinese nationals studying at U.S. academic institutions for possible revocation.

Additionally, the Executive Branch should engage in international negotiations to establish a legally binding international standard for laboratory biosafety, to include certification and inspections by an international organization similar to the International Atomic Energy Agency.

Foreign governments facing economic contraction that have entered into agreements under the PRC's Belt and Road Initiative are encouraged to examine bilateral agreement terms. In particular, agreements or memoranda of understanding that promote joint scientific and academic research wherein the Chinese government has access to natural resources, minerals, plant life, and animals unique to the nation state. Agreements that promote adaptation of governing structures that centralize control over all local, municipal, or provincial levels increase the risk of creating national governing structures that manipulate, misinform, misdirect and gaslight their own citizens to protect centralized governing structures.

Foreign governments considering entering into bilateral agreements with the PRC are advised to be aware that based on the information presented within this report, the PRC conducts scientific research without regard for adequate safety protocols in place, in a manner that does not comport with international safety standards, and without adequate assessment of the risks scientific research may pose to the environment, test subjects, or humanity. It is the recommendation of the Committee Minority Staff that such agreements be avoided.



## VII. CONCLUSION

The Intelligence Community 90-day review report on the origins of COVID-19, ordered by President Biden, is due no later than August 24, 2021. While based on open source information, it is the hope of Committee Minority Staff that the collection and analysis contained within this addendum, produced at the direction of Ranking Member Michael T. McCaul, will help inform the public debate about the viability of a laboratory accident being the source of SARS-CoV-2. It is vital the public discourse surround the Wuhan Institute of Virology is transparent, honest, and detailed.

**It is the opinion of Committee Minority Staff, based on the preponderance of available information; the documented efforts to obfuscate, hide, and destroy evidence; and the lack of physical evidence to the contrary; that SARS-CoV-2 was accidentally released from a Wuhan Institute of Virology laboratory sometime prior to September 12, 2019. The virus, which may be natural in origin or the result of genetic manipulation, was likely collected in the identified cave in Yunnan province, PRC, sometime between 2012 and 2015. Its release was due to poor lab safety standards and practices, exacerbated by dangerous gain-of-function research being conducted at inadequate biosafety levels, including BSL-2. The virus was then spread throughout central Wuhan, likely via the Wuhan Metro, in the weeks prior to the Military World Games. Those games became an international vector, spreading the virus to multiple continents around the world.**

It is incumbent on the parties identified in this report to respond to the issues raised herein and provide clarity and any new or additional evidence as soon as possible. As always, Committee Minority Staff stands ready to receive such evidence or testimony that supports or contradicts this report. Until such time as the Chinese Communist Party lifts its self-imposed veil of secrecy, explains its lies regarding the early stages of the pandemic, and provides access to the WIV's archives and sample database, questions will remain as to the origins of SARS-CoV-2 and the COVID-19 pandemic. Until that day, it is incumbent upon the United States and likeminded countries around the world to ensure accountability, and implement the reforms necessary to prevent the CCP's malfeasance from giving rise to a third pandemic during the 21st century.

## VII. APPENDIX

### Timeline of the WIV Lab Leak and the Start of the COVID-19 Pandemic

- **April 2012:** Six miners working in a copper mine located in a cave in Yunnan province of the PRC fall ill. Between the ages of 30 and 63, the workers presented to a hospital in Kunming with persistent coughs, fevers, head and chest pains, and breathing difficulties.” Three of the six died.
- **Late 2012 – 2015:** Researchers from the WIV collect samples from bats in the cave.
- **2015 - 2017:** Shi Zheng-li, Ben Hu, Peter Daszak, and Linfa Wang jointly publish research on the isolation of novel coronaviruses. They conduct gain-of-function research, testing novel and genetically manipulated coronaviruses against mice and other animals expressing human immune systems. At times they collaborate with Ralph Baric.
- **2018 – 2019:** Shi, Hu, and other researchers at the WIV infect transgenic mice and civets expressing human immune systems with unpublished novel and genetically modified coronaviruses.
- **July 4, 2019:** The PRC’s Ministry of Science and Technology orders a review of several grants, including grant no. 2013FY113500. This is the grant which funded the collection of hundreds of coronaviruses and bat samples from the cave in Yunnan province.
- **July 16, 2019:** The WIV publishes a tender requesting bids to conduct renovation on the hazardous waste treatment system at the Wuhan National Biosafety Lab (WNBL). The closing date was July 31st.
- **Late August/Early September 2019:** One or more researchers become accidentally infected with SARS-CoV-2, which was either collected in the Yunnan cave, or the result of gain-of-function research at the WIV. They travel by metro in central Wuhan, spreading the virus.
- **September 12, 2019:** At 12:00am local time, the Wuhan University issues a statement announcing lab inspections. Between 2:00am and 3:00am, the WIV’s viral sequence and sample database is taken offline. At 7:09pm, the WIV publishes a tender requesting bids to provide security services at the WNBL.
- **September – October 2019:** Car traffic at hospitals surrounding the WIV Headquarters, as well as the shuttle stop for the WNBL, show a steady increase before hitting its highest levels in 2.5 years. Baidu search terms for COVID-19 related symptoms increase in a corresponding manner.
- **Late October – Early November 2019:** The international athletes return home, carrying SARS-CoV-2 around the world.

- **November 21, 2019:** A 4-year-old boy from Milan, Italy develops a cough. His samples will later test positive for COVID-19.
- **November 27, 2019:** Samples of wastewater are collected in Brazil that will later test positive for the presence of SARS-CoV-2 RNA.
- **December 1, 2019:** The CCP's first "official" case of COVID-19 become infected.
- **Late 2019:** Major General Chen Wei arrives in Wuhan, taking over the WNBL BSL-4 lab.
- **Dec. 27, 2019:** A Chinese genomic company reportedly sequenced most of the virus in Wuhan and results showed a similarity to SARS. Zhang Jixian, a doctor from Hubei Provincial Hospital of Integrated Chinese and Western Medicine, tells PRC health authorities that a novel disease affecting some 180 patients was caused by a new coronavirus.
- **Dec. 29, 2019:** Wuhan Municipal CDC organized an expert team to investigate after the Hubei Provincial Hospital of Integrated Chinese and Western Medicine and other hospitals find additional cases.
- **Dec. 30, 2019:** Doctors in Wuhan report positive tests for "SARS Coronavirus" to local health officials. Under the 2005 International Health Regulations, the PRC is required to report these results to the WHO within 24 hours. They do not.
- **Dec. 31, 2019:** WHO officials in Geneva become aware of media reports regarding an outbreak in Wuhan and direct the WHO China Country Office to investigate.
- **Jan. 2020:** Linfa Wang meets with collaborators at the WIV, likely including Shi and Hu.
- **Jan. 1, 2020:** Hubei Provincial Health Commission official orders gene sequencing companies and labs who had already determined the novel virus was similar to SARS to stop testing and to destroy existing samples. Dr. Li Wenliang is detained for "rumor mongering."
- **Jan. 2, 2020:** The Wuhan Institute of Virology (WIV) completes gene sequencing of the virus, but the CCP does not share the sequence or inform the WHO. PRC aggressively highlights the detentions of the Wuhan doctors.
- **Jan. 3, 2020:** China's National Health Commission ordered institutions not to publish any information related to the "unknown disease" and ordered labs to transfer samples to CCP controlled national institutions or destroy them.
- **Jan. 11-12, 2020:** After a researcher in Shanghai leaks the gene sequence online, the CCP transmits the WIV's gene sequencing information to the WHO that was completed 10 days earlier. The Shanghai lab where the researcher works is ordered to close.

**Jan. 14, 2020:** Xi Jinping is warned by a top Chinese health official that a pandemic is occurring.

**Jan. 18, 2020:** Linfa Wang departs Wuhan.

**Jan. 20, 2020:** WIV researchers submitted an article claiming that SARS-CoV-2 is natural in origin. The article renames ID4991 as RaTG13 and contained false information about when the genomic sequence for the virus was obtained.

**Jan. 23, 2020:** The CCP institutes a city-wide lockdown of Wuhan. However, before the lockdown goes into effect, an estimated 5 million people leave the city.

**Last Week of January 2020:** Daszak and other outside experts edit a letter to be sent by the Presidents of the National Academies of Sciences, Engineering, and Medicine to the White House Office of Science and Technology Policy. Daszak pushes for language to address “conspiracy theories.”

**Jan. 30, 2020:** One week after declining to do so, Tedros declares a Public Health Emergency of International Concern.

**Late Jan. – Early Feb. 2020:** PRC researchers, likely those at the WIV, request Peter Daszak’s assistance in responding to suggestions of a lab leak or genetic manipulation of SARS-CoV-2. Daszak helps edit the National Academies of Sciences, Engineering, and Medicine’s response to the White House Office of Science and Technology Policy on the origins of COVID-19.

**Feb. 3, 2020:** The WIV researchers’ paper submitted on January 20th is published by *Nature* online.

**Feb. 6, 2020 at 12:43:40 am:** Daszak sends the draft Lancet statement, which cites the Feb. 3 WIV paper, to Wang, Baric, and others asking them to join as cosigners. Within hours, Wang calls him, informs Daszak that he will not sign, and requests that neither Daszak or Baric sign.

**Feb. 6, 2020 (Afternoon):** At 3:16pm, Daszak send a High Important email to Baric, forwarding Wang’s request, and informing Baric the statement will be “put out in a way that doesn’t link it back to our collaboration.” At 4:01:22 pm, Baric agrees to not sign the statement.

**Feb. 7, 2020:** Dr. Li, who first shared the positive SARS test results with his classmates via WeChat, dies from COVID-19.

**Feb. 9, 2020:** The death toll for COVID-19 surpasses that of SARS.

**Feb. 15, 2020:** First death from COVID-19 outside of Asia occurs, in France.

- **Feb. 16, 2020:** WHO and PRC officials begin a nine-day “WHO-China Joint Mission on Coronavirus Disease 2019” and travel to the PRC to examine the outbreak and origin of COVID-19. Many team members, including at least one American, were not allowed to visit Wuhan.
- **Feb. 18, 2020:** Daszak statement is published by the *Lancet* online, which references the letter from the U.S. National Academies of Sciences, Engineering, and Medicine he helped write and the WIV’s February 3rd paper on the origins of COVID-19. Despite drafting the letter, Daszak is not listed as the corresponding author.
- **Feb. 25, 2020:** For the first time, more new cases are reported outside of PRC than within.
- **Feb. 26, 2020:** The WHO-China Joint Mission issues its findings, praising the PRC for its handling of the outbreak.
- **Feb. 29, 2020:** The first reported COVID-19 death in the United States occurs.
- **March 11, 2020:** The WHO officially declares the COVID-19 outbreak a pandemic after 114 countries had already reported 118,000 cases including more than 1,000 in the United States.
- **Nov. 17, 2020:** As a result of public pressure, Shi, Hu, and other WIV researchers publish an addendum to their February 3rd paper, confirming that RaTG13 was ID4991 collected from the cave in Yunnan, and revealing they collected 293 coronaviruses from the cave between 2012 and 2015.
- **June 15, 2021:** The Presidents of the U.S. National Academies of Sciences, Engineering, and Medicine release a statement saying, “let scientific evidence determine origin of SARS-CoV-2.”
- **June 21, 2021:** After public pressure, Daszak updates his public disclosure form for the *Lancet* statement. He does not mention the WIV or that the statement was drafted at the request of PRC researchers.
- **July 5, 2021:** Daszak and 23 of the original 27 authors release an update to their February 2021 statement, walking back their labeling of public debate around the source of the virus as “conspiracy theories.”



China Center for Disease and Control Memo on Supplementary Regulations

# 中国疾控中心处(室)便函

科技处便函〔2020〕16号

## 关于加强新型冠状病毒肺炎应急响应期间有关 科技管理的补充规定

中心直属各单位，机关各处室：

为进一步加强我中心新型冠状病毒肺炎应急响应期间科研管理，根据上级有关文件精神，特制定《加强新型冠状病毒肺炎应急响应期间有关科技管理的补充规定》，请各单位和各处室负责人务必高度重视，层层传达，必须通知到每个人。如有违反有关规定者，将追究单位和违规者的责任。

附件：加强新型冠状病毒肺炎应急响应期间有关科技管理的补充规定

中国疾控中心科技处

2020年2月25日

抄送：高福、李新华、刘剑君、冯子健。

附件

## 加强新型冠状病毒肺炎应急响应期间有关科技 管理的补充规定

根据《国家卫生健康委办公厅关于在重大突发传染病防控工作中加强生物样本资源及相关科研活动管理工作的通知》（国卫办科教函〔2020〕3号）、《科技部办公厅关于加强新型冠状病毒肺炎科技攻关项目管理有关事项的通知》等文件精神，为有力抗击新型冠状病毒肺炎（简称“新冠肺炎”）疫情，严格规范科研管理，进一步加强科研管理制度的落实，现对《加强新型冠状病毒感染的肺炎应急响应期间有关科技管理规定》（中疾控科技便函〔2020〕128号）制定本补充规定。

一、坚持国家和人民利益至上，以做好新冠肺炎疫情防控为首要任务。疫情应急响应期间，要集中优势力量，分清轻重缓急，将主要精力放在疫情防控中，把论文“写在祖国大地上”，把研究成果应用到战胜疫情中，在疫情防控任务完成之前不应将精力放在论文发表上。

二、开展新冠肺炎疫情相关科研项目，必须经科技组/科技处进行初审，根据研究内容组织专家进行科学论证和伦理审查，必要时提请应急领导小组或国家卫生健康委科教司审批。上级委托的科研项目必须经科技组/科技处请示应急领导小组审定并备案。

三、任何人不能以个人或研究团队名义擅自向其他机构和个人提供新冠肺炎疫情相关信息，包括数据、生物标本、病原体、培养物等。

四、在发表与新冠肺炎疫情相关的论文和成果前，必须先报科技组/科技处初审，必要时提请应急领导小组或国家卫生健康委科教司审批。

未经科技组/科技处审核的已投稿的论文，尽快撤稿并执行本规定。

五、科研项目进展报告原则上按月报科技组/科技处，或根据上级要求的时限进行报告。

六、要严格遵循医学伦理、科研诚信和学风建设等相关规定。

七、有违反上述规定者，依纪依法依规进行严肃处理。

八、本规定发布之日执行，由科技组/科技处解释。

中国疾控中心科技处

2020年2月25日

## **Memo to the Offices of the Chinese Center for Disease Control and Prevention**

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Memo (2020) No. 16 of the Science and Technology Department

### **On the Supplementary Regulations on Strengthening the Management of Science and Technology During the Emergency Response to the Novel Coronavirus Pneumonia**

All units and offices directly under the center:

In order to further strengthen scientific research management in our center during the emergency response to the novel coronavirus pneumonia, and in accordance with the spirit of relevant documents issued by the higher authorities, the "Supplementary Regulations on Strengthening the Management of Science and Technology During the Emergency Response to the Novel Coronavirus Pneumonia" has been formulated. Every unit and office, please attach great importance to it and spread it through all levels - everyone must be notified. In case of any violation of relevant regulations, the offender and their unit will be held accountable.

Attachment: Supplementary Regulations on Strengthening the Management of Science and Technology During the Emergency Response to the Novel Coronavirus Pneumonia

Chinese Center for Disease Control and Prevention  
February 25, 2020

CC: Gao Fu, Li Xinhua, Liu Jianjun, Feng Zijian.

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Annex

**Supplementary Regulations on Strengthening the Management  
of Science and Technology During the Emergency Response to the  
Novel Coronavirus Pneumonia**

According to the spirit of the "Notice of the General Office of the National Health Commission on Strengthening the Management of Biological Sample Resources and Related Scientific Research Activities during the Prevention and Control of Major Infectious Diseases" (National Health Commission Science and Technology Memo [2020] No. 3), the "Notice of the General Office of the Ministry of Science and Technology on Strengthening the Management of New Coronavirus Pneumonia Science and Technology Research Projects" and other documents, and in order to effectively combat the new coronavirus pneumonia ("COVID-19") epidemic, to strictly standardize scientific research management, and to further strengthen the implementation of scientific research management systems, these supplementary "Regulations on Strengthening the Management of Science and Technology During the Emergency Response to the Novel Coronavirus Pneumonia" (Chinese Center for Disease Control Science and Technology Memo [2020] No. 128) have been formulated.

1. Prioritize the interests of the country and the people and take the prevention and control of the COVID-19 epidemic as the primary task. During the emergency response against the epidemic, we must concentrate our forces, distinguish our priorities, focus our main energies on controlling the epidemic, write papers "on the land of the motherland", apply research results to the fight against the epidemic, and not focus on publishing papers until the epidemic is under control.

2. The launch of scientific research projects related to the COVID-19 epidemic must undergo preliminary review by the Science and Technology Group/Department. According to the research subject, experts should be organized to conduct scientific and ethical reviews, and, if necessary, the project must be submitted to the emergency



leading group or the Department of Science and Education of the National Health Commission for approval. The research projects authorized by higher authorities must be examined and approved by the emergency leading group via the Science and Technology Group/Department and be kept on record.

3. No one can, under their own name or in the name of their research team, provide other institutions and individuals with information related to the COVID-19 epidemic on their own, including data, biological specimens, pathogens, culture, etc.

4. Before publishing papers and research results related to the COVID-19 epidemic, you must first report them to the Science and Technology Group/Department for preliminary review, and if necessary, submit it to the Emergency Leading Group or the Department of Science and Education of the National Health Commission for approval.

Papers that have been submitted but not yet reviewed by the Science and Technology Group/Department should be withdrawn as soon as possible and redone according to these regulations.

5. In principle, progress reports on scientific research projects should be reported to the Science and Technology Group/Department on a monthly basis, or according to the time period stipulated by higher authorities.

6. Strictly follow relevant regulations on medical ethics, scientific research integrity and academic spirit.

7. Anyone who violates the above regulations shall be dealt with severely in accordance with discipline, laws and regulations.

8. The date of the implementation of this regulation will be explained by the Science and Technology Group/Department.

Chinese Center for Disease Control and Prevention  
February 25, 2020

JCPM Confidential Notice on the Standardization of the Management of Publication of Novel  
Coronavirus Pneumonia Scientific Research

## 国务院应对新型冠状病毒肺炎疫情联防联控机制科研攻关组

### 关于规范新冠肺炎科研攻关成果 信息发布管理的通知

国务院应对新型冠状病毒肺炎疫情联防联控机制科研攻关组成员单位  
办公厅(室)、有关单位:

为深入贯彻国务院应对新型冠状病毒肺炎疫情联防联控机制(以下  
简称国务院联防联控机制)会议的有关要求,切实规范科研攻关成  
果信息发布管理,现就有关事项通知如下。

#### 一、全面加强科研攻关成果信息发布管理

按照“依法依规、科学客观、归口管理、精准发布”的原则,  
把新冠肺炎治疗药物、疫苗、病毒溯源、病毒传播途径、检测试剂等  
各类疫情防控科研成果信息的发布工作,纳入国务院应对新型冠状病毒  
肺炎疫情联防联控机制科研攻关组(以下简称科研攻关组)的统一部  
署。科研攻关组统筹协调科研应急攻关成果信息发布,指导、协调各  
地各单位科研成果信息发布。

## 二、建立规范的科研攻关成果信息发布机制

科研攻关组各成员单位及时汇总本单位、本系统科研攻关成果信息，就发布内容、发布形式进行审核把关，并及时报科研攻关组批准。科研攻关组按业务归口组织各专班负责对发布内容、发布形式提出专业性审核意见，必要时组织专家论证。科研攻关组同意后，发布单位应根据工作需要选择新闻发布会、官方网站、政务新媒体、新闻媒体等平台发布，并通报国务院联防联控机制宣传组、科研攻关组。原则上，新冠肺炎科研成果信息首发采用官方权威发布形式。舆论专班加强与宣传组沟通，结合舆情动态和社会关切，强化对科研成果信息发布的指导。

## 三、严格要求各科研单位做好科研成果信息发布

联防联控机制科研攻关组各成员单位要按照归口管理原则，严格本单位本系统相关科研成果信息的发布审批程序，加强对本单位本系统归口管理的高等院校、研究机构、企业的管理，将本通知要求传达至从事新冠肺炎研究的各相关单位。各成果信息发布单位是发布内容的第一责任人，要综合考虑实际工作进展、疫情防治态势、社会关切问题、预期发布成效等方面，精准确定发布内容，合理引导社会预期。各高等院校、研究机构、医疗机构、企业及其人员在疫情防控期间，未经审批不得擅自发布疫情防控相关科研成果信息。在中华医学会平台交流的论文仍按原备案机制办理。

#### 四、加强科研攻关成果信息发布工作统筹

疫情防控期间，各地各单位要认真贯彻落实习近平总书记关于疫情防控工作的一系列重要指示精神，进一步强化大局意识、责任意识，加强审核把关，主动沟通协调，形成新冠肺炎科研成果信息发布全国“一盘棋”格局。重要敏感科研成果信息要反复核实，把握不准的要及时按程序向科研攻关组及相关部门请示。

#### 五、强化监督问责

对未按规定程序报批，发布未经证实的虚假科研成果信息，造成严重不良社会影响的，要追究责任。

联系人：赵 婧， [REDACTED]、[REDACTED]  
吴运高， [REDACTED]、[REDACTED]  
传真： [REDACTED]， 联系邮箱： [REDACTED]

国务院应对新型冠状病毒肺炎  
疫情联防联控机制科研攻关组  
(代章)  
2020年3月3日

(此件不公开)

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抄送：国务院联防联控机制宣传组。

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科学技术部办公厅

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2020年3月3日印发

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## **Joint Prevention and Control Mechanism of the State Council in Response to the Novel Coronavirus Pneumonia Scientific Research Group**

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### **Notice on the Standardization of the Management of Publication of Novel Coronavirus Pneumonia Scientific Research**

To the Joint Prevention and Control Mechanism of the State Council in Response to the Novel Coronavirus Pneumonia member work units and offices, and other relevant work units:

In order to thoroughly implement relevant requirements from the meeting of the Joint Prevention and Control Mechanism of the State Council in Response to the Novel Coronavirus Pneumonia (hereinafter referred to as the "Joint Prevention and Control Mechanism of the State Council"), and to effectively standardize the management of the publication of scientific research, the following is issued below.

#### **1. Comprehensively strengthen the management of publication of scientific research**

In accordance with the principles of "following laws and regulations, being scientific and objective, centralized management, and precise publications", all publication work on epidemic prevention research and information related to COVID-19, including medication, vaccines, virus origins, virus transmission routes, testing reagents, etc. will be taken over by the Joint Prevention and Control Mechanism of the State Council's scientific research group (hereinafter referred to as "the scientific research group") for coordinated deployment. The scientific research group will coordinate the publication of information on emergency scientific research, and guide and coordinate the publication of information on scientific research by all work units in all locations.

#### **2. Establish a standardized publication mechanism for scientific research**



Each member work unit of the scientific research team will gather scientific research information within their own unit and systems, review and check the content and form of its publication, and report it to the scientific research team for approval in a timely manner. The scientific research group's dedicated teams of professionals and various experts are responsible for reviewing the publication's content and format and giving expert opinions, and when necessary, arranging expert assessment. After the scientific research group approves, the publishing work unit should, according to work requirements, arrange publication via press conferences, official websites, state social media, news media and other platforms, and notify the propaganda and scientific research teams of the Joint Prevention and Control Mechanism of the State Council. In principle, COVID-19 scientific research should be published first in the form of an official authoritative publication. The special group on public opinion should strengthen communication with the propaganda team, take into account the trend of public opinion and social concerns, and strengthen guidance of the publication of scientific research and information.

**3. Strictly require all scientific research units to do a good job on the publication of scientific research**

The member work units of the scientific research team of the Joint Prevention and Control Mechanism shall follow the principle of centralized management, strictly enforce their own system's publication approval procedures for relevant scientific research, strengthen the management of universities, research institutions, and enterprises under the centralized management of their work unit systems, and communicate the requirements of this notice to all relevant units engaged in research on COVID-19. The publishing work unit is the one primarily responsible for the research content they publish, and they must consider, in a comprehensive manner, the research progress, the epidemic prevention and control situation, societal concerns, the consequences of publication, and various other issues. They must ensure the accuracy of the published content and guide societal expectations in a reasonable manner. During the period of epidemic prevention and control, all universities, research institutions, medical institutions, enterprises and their staff shall not publish information on scientific research related to epidemic prevention and control without approval. Papers exchanged on the Chinese Medical Association

#### 四、加强科研攻关成果信息发布工作统筹

疫情防控期间，各地各单位要认真贯彻落实习近平总书记关于疫情防控工作的一系列重要指示精神，进一步强化大局意识、责任意识，加强审核把关，主动沟通协调，形成新冠肺炎科研成果信息发布全国“一盘棋”格局。重要敏感科研成果信息要反复核实，把握不准的要及时按程序向科研攻关组及相关部门请示。

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对未按规定程序报批，发布未经证实的虚假科研成果信息，造成严重不良社会影响的，要追究责任。

联系人：赵 婧， [REDACTED]， [REDACTED]  
吴运高， [REDACTED]， [REDACTED]  
传真： [REDACTED]， 联系邮箱： [REDACTED]

国务院应对新型冠状病毒肺炎  
疫情联防联控机制科研攻关组  
(代章)  
2020年3月3日

(此件不公开)

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抄送：国务院联防联控机制宣传组。

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科学技术部办公厅

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2020年3月3日印发

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February 6, 2020, Email at 12:43am from Peter Daszak to Ralph Baric, Linfa Wang, and Others  
Inviting Them to Sign the Statement

A Statement in support of the  
scientists, public health and medical  
professionals of China

Feb 6, 2020 12:43:40 AM EST

**A Statement in support of the scientists, public health and medical  
professionals of China**

**Subject:** A Statement in support of the scientists, public health and medical professionals of China  
**From:** Peter Daszak [REDACTED]  
**To:** Ralph Baric [REDACTED]  
[REDACTED]  
[REDACTED]  
**Cc:** [REDACTED]  
**Sent:** February 6, 2020 12:43:40 AM EST  
**Attachments:** Statement of support, 2019nCoV China: Final.docx

A Statement in support of the  
scientists, public health and medical  
professionals of China

Feb 6, 2020 12:43:40 AM EST

Dear Ralph, Linda, Jim, Rita, Linfa and Hume,

I've been following the events around the novel coronavirus emergence in China very closely and have been dismayed by the recent spreading of rumors, misinformation and conspiracy theories on its origins. These are now specifically targeting scientists with whom we've collaborated for many years, and who have been working heroically to fight this outbreak and share data with unprecedented speed, openness and transparency. These conspiracy theories threaten to undermine the very global collaborations that we need to deal with a disease that has already spread across continents.

We have drafted a simple statement of solidarity and support for scientists, public health and medical professionals of China, and would like to invite you to join us as the first signatories. If you agree, we will send this letter to a group of around half-a-dozen other leaders in the field and then disseminate this widely with a sign-up webpage for others to show their support by signing up to its language. I will then personally present this at my plenary during the ICID 2020 conference in Malaysia in two weeks, with the goal of also getting widespread attention in SE Asia to our support for the work that our colleagues in China are undertaking.

I sincerely hope you can join us. Please review the letter, and let me know if you are willing to join Billy Karesch and myself as co-signatories. Also, please confirm your title and affiliation that will be shown in the letter. We plan to make circulate this widely to coincide with a letter from the Presidents of the US National Academies of Science, Engineering, and Medicine, which will likely be released tomorrow or Friday.

Thank you for your consideration and support of the scientific and public health community around the world!

Cheers,

Peter

**Peter Daszak**  
President

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*EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that prevent pandemics and promote conservation.*

A Statement in support of the  
scientists, public health and medical  
professionals of China

Feb 5, 2020 12:43:40 AM EST

**Statement in Support of the Scientists, Public Health, and Medical Professionals  
of China Combating the Novel Coronavirus Outbreak**

We, the undersigned, are scientists who have followed the emergence of 2019-nCoV, and are deeply concerned about its global impact on people's health and well-being. We have watched as the scientists, public health and medical professionals of China have worked heroically to rapidly identify the pathogen behind this outbreak, put in place significant measures to reduce its impact, and share their results transparently with the global health community. We sign this statement in solidarity with all scientists, public health, and medical professionals in China who continue to save lives and protect *global* health during the challenge of this novel coronavirus outbreak. We want you to know that we are all in this together, with you in front of us on the battlefield against the novel coronavirus.

The rapid, open and transparent sharing of data on 2019-nCoV is now being threatened by rumors and misinformation around the origins of this outbreak. We stand together to strongly condemn conspiracy theories suggesting that 2019-nCoV does not have a natural origin. Scientific evidence overwhelmingly suggests that this virus originated in wildlife, as have so many other emerging diseases (1-4). This is further supported by a letter from the Presidents of the US National Academies of Science, Engineering, and Medicine, and by the scientific communities they represent (INSERT REF). Conspiracy theories will do nothing but create fear, rumors, and prejudice that jeopardize our global collaboration in the fight against this virus. We need to prioritize scientific evidence and unity over misinformation and conjecture now. We want you all to know that we stand with you, the science and health professionals of China, in your fight against this virus.

We invite others to join us in supporting the scientists, public health, and medical professionals of Wuhan and across China. Stand with our colleagues on the front-line!

*Please add your name in an act of support by going to (INSERT LINK HERE).*



A Statement in support of the  
scientists, public health and medical  
professionals of China

Feb 6, 2020 12:43:40 AM EST

#### **Signatories**

Dr. Peter Daszak, President, EcoHealth Alliance  
Dr. Jim Hughes, Professor Emeritus, Emory University  
Dr. Rita Colwell, former Director of National Science Foundation  
Dr. Ralph Baric, Professor, The University of North Carolina, Chapel Hill  
Dr. Linda Saif, Distinguished University Professor, The Ohio State University  
Dr. Billy Kresh, Executive Vice President, EcoHealth Alliance  
Dr. Linfa Wang, Professor, Duke-NUS Medical School  
Dr. Hume Field, Honorary Professor, The University of Queensland

#### **References**

1. P. Zhou et al., A pneumonia outbreak associated with a new coronavirus of probable bat origin. *Nature*, (2020).
2. R. Lu et al., Genomic characterisation and epidemiology of 2019 novel coronavirus: implications for virus origins and receptor binding. *The Lancet*, (2020).
3. N. Zhu et al., A Novel Coronavirus from Patients with Pneumonia in China, 2019. *New England Journal of Medicine*, (2020).
4. L. Ren et al., Identification of a novel coronavirus causing severe pneumonia in human: a descriptive study. *Chin Med J. Epub ahead of print*, (2020).

February 6, 2020, Email at 3:16pm from Peter Daszak to Ralph Baric Relaying Wang's Request  
Not to Sign the Statement

To: Peter Daszak [REDACTED]  
Cc: [REDACTED]  
From: Baric, Ralph [REDACTED]  
Sent: Thur 2/6/2020 4:01:22 PM (UTC-05:00)  
Subject: RE: No need for you to sign the "Statement" Ralph!!

I also think this is a good decision. Otherwise it looks self-serving and we lose impact. ralph

From: Peter Daszak [REDACTED]  
Sent: Thursday, February 6, 2020 3:16 PM  
To: Baric, Ralph S [REDACTED]  
Cc: [REDACTED]  
Subject: No need for you to sign the "Statement" Ralph!!  
Importance: High

I spoke with Linfa last night about the statement we sent round. He thinks, and I agree with him, that you, me and him should not sign this statement, so it has some distance from us and therefore doesn't work in a counterproductive way.

Jim Hughes, Linda Saif, Hume Field, and I believe Rita Colwell will sign it, then I'll send it round some other key people tonight. We'll then put it out in a way that doesn't link it back to our collaboration so we maximize an independent voice.

Cheers,

Peter

**Peter Daszak**  
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*EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that prevent pandemics and promote conservation.*

February 8, 2020, Email at 8:52pm from Peter Daszak to Rita Colwell Alleging WIV Researchers  
Requested the Statement

From: Peter Daszak [REDACTED]  
Sent: Saturday, February 08, 2020 8:52 PM  
To: Rita Colwell [REDACTED]  
Cc: Rita Colwell [REDACTED]  
Subject: RE: coronavirus statement  
Importance: High

Hi Rita,

I appreciate your comments and I think at this point, that work has already been done, with >50 genomes published from 12 countries, and phylogenetic analyses published by authors from multiple countries. I've tried to make this a bit more clear, and have edited the letter as follows, so it hopefully addresses your comments:

- 1) I've inserted a reference to the GISAID webpage where 57 (to date) full genome sequences of 2019-nCoV from 12 countries are published and analyzed
- 2) I've inserted a reference to the CDC webpage on 2019-nCoV which makes the following statement, completely in concurrence with our letter:  
*"2019-nCoV is a betacoronavirus, like MERS and SARs, both of which have their origins in bats. The sequences from U.S. patients are similar to the one that China initially posted, suggesting a likely single, recent emergence of this virus from an animal reservoir."*

In addition, please note that we will not be referring to this as a 'petition' but as a 'statement in support of' – This is in the title and will be in all materials we send out. This is to avoid the appearance of a political statement – this is simply a letter from leading scientists in support of other scientists and health professionals who are under serious pressure right now.

I hope you are willing to sign on to this - your voice will be very influential, particularly in keeping these critical bridges open between the USA and China. You should know that the conspiracy theorists have been very active, targeting our collaborators with some extremely unpleasant web pages in China, and some have now received death threats to themselves and their families. They have asked for any show of support we can give them.

As soon as we hear back from you we'll get ready to send this to our larger list (attached), but of course if you don't feel comfortable, I'll make sure your name is not associated with this..

Cheers,

Peter

**Peter Daszak**  
President

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# Exhibit 18

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/349073738>

# An investigation into the WIV databases that were taken offline

Preprint · February 2021

DOI: 10.13140/RG.2.2.28029.08160

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Gilles Demaneuf

Engineer and Data Scientist

30 PUBLICATIONS 12 CITATIONS

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## DBs Taken Offline

### Objectives:

- List all the DBs that were taken offline
- Explain their significance
- Back it up with screenshots and proofs of deletion

## 1. WIV: Bat and rodent borne viral pathogens - batvirus.whiov.ac.cn

### 1.a Findings:

- Batvirus.whiov.ac.cn is an essential database
- Batvirus.whiov.ac.cn fits into key Chinese and international programs
- Part of batvirus.whiov.ac.cn data was always confidential
- Partial funding of samples collection and sequencing via the NIH does not secure ownership of resulting data
- The aim of the projects funded by the NIH includes pathogenicity enhancement studies using unpublished viruses
- Financial support and membership of EVAg is at odds with the unavailability of batvirus.whiov.ac.cn and the lack of transparency of the WIV
- External access to Batvirus.whiov.ac.cn ended on 12th Sep 2019
- Untimely changes to the database description on 30<sup>th</sup> Dec 2019 may betray some sensitive research
- Batvirus.whiov.ac.cn holds essential information on SARS-CoV-2 origins
- Questions as to the unavailability of batvirus.whiov.ac.cn are not being properly answered
- The suspension of the availability of batvirus.whiov.ac.cn is contrary to Chinese law

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### Finding: Batvirus.whiov.ac.cn is an essential database

- The administrator of the database is Shi Zhengli herself.
  - In <http://batvirus.whiov.ac.cn> (the WIV address for the database), whiov stands for Wu Han Institute Of Virology. The 'batvirus' prefix can be confusing as this is not just a bat database despite the name.
  - The alternative address is <http://www.scidb.cn/dadaSet/handle/768> which is its online location on a Chinese service for science datasets.
- It is the most important BatCoV database in China and holds the samples and sequences from the WIV. A description is available [online here](#) (English [translation](#)).
- It focuses primarily on bats and rodents, but also held bird and arthropods (insects & ticks) samples
  - The database held more than 22,000 samples and sequence records, including for all WIV sampling trips going back many years, plus some data from external DBs (namely [DBatVir](#) (bats) and [DRodVir](#) (rodents), managed by the Institute of Pathogen Biology in Beijing - both still available).
  - Tick pathogens were also very much a field of study, with more than 50,000 tick samples collected.
- The database contains data on seasonal epidemics of viruses crossing the species barrier, data not provided by DBatVir (for bats) or DRodVir (for rodents). This makes it potentially the best database for investigating whether the theory of natural spillover of SARS-CoV-2 is plausible. The database includes samples and sequences of bat beta-coronaviruses gathered by the WIV on trips to Yunnan including Mojiang (where RaTG13 was sampled), sequences that have not all been made public.

- Rodents were a common WIV sampling target too. One of the first sampling trips by the WIV at the Mojiang mine in 2012 (shortly after the death of 3 workers who removed bat guano there) would include sampling of rats, not just bats. On that occasion the [Mojiang paramyxovirus](#) was discovered.
- More specifically:
  - The WIV had collected over [15,000 samples from bats](#) (amongst the 22,000 records of samples in the DB)
  - The DB contained over [1,400 strains](#) of viruses across all species (animal, insect), including around 1,000 coronaviruses, with at least [500](#) recently discovered bat coronaviruses, and at least [50](#) of these close to SARS.
  - At least 19 of these coronaviruses were isolated (meaning grown in cell culture).

#### **Finding: [Batvirus.whiov.ac.cn](#) fits into key Chinese and international programs**

- The sampling, sequencing effort and building of the database was funded under program [2013FY113500 "Investigation of viral pathogens of major natural hosts and vector insects in China"](#), launched by the Chinese Ministry of Science & Technology in May 2013, a program that was being reviewed around the time of the outbreak.
- The database also aligned perfectly with the successor program "[Scientific survey of principal natural viral pathogen resources in China](#)" that was put out to tender in July 2019 by the Chinese Ministry of Science & Technology (thereafter the "**2019 Scientific Survey**"). That successor program [was to be led by the Shanghai lab of Professor Zhang Yongzhen](#), who was the first to publicly share a SARS-CoV-2 sequence. Employees of the Shanghai lab confirmed that SARS-CoV-2 was identified under this successor program ([1](#), [2](#), [3](#))
- **Note:** There were later unverifiable stories that the program (likely meaning funding under the program) was delayed pending final approval. These vague stories could very well be disinformation to try to dissociate any recent research from the very specific research objectives of the 2019 Survey. In any case the 2019 NIH-EcoHealth grant already provided some funding.
- The new program is in line with the [China National Global Virome Initiative](#), part of the China Virome Project (launched Feb 2018 at the Prince Mahidol Annual Conference in Bangkok), which itself is the Chinese implementation of the international [Global Virome Project](#) (launched Aug 2013)
- The [proof-of-concept](#) of the GVP was the Emerging Pandemic Threats programs managed by USAID/PREDICT (EPT-1 started 2009 for 5 years, then [EPT-2](#) started in 2014).
  - EPT-2 was [scaled down in Jan 2019](#) by [the Trump administration](#), 8 months before it [reached the end of its 5-year funding cycle](#) (Sep 2019). It nevertheless received an administrative extension (with no budget) to March 2020 to be able to write up final reports.
  - The scaling down of EPT-2 resulted in an intense politicization of the debate, still evident to this day.
  - [batvirus.whiov.ac.cn](#) was in line with the [proposed research direction](#) recommended by WIV researchers in March 2019 to investigate cross-species transmission and human pathogenesis of bat SARS-related coronaviruses, with the inclusion of rodents for instance.

#### **Finding: [Part of batvirus.whiov.ac.cn](#) data was always confidential**

- [Batvirus.whiov.ac.cn](#) holds a password protected section for data that was not to be freely shared. That private data includes:
  - (1) Sampling data of viruses not yet sequenced and (2) sequences of viruses that have not yet been the object of publication.
    - **Note:** The idea is very likely to get the WIV and its associates the privilege of writing the first papers on the viruses sampled by the WIV.
  - (2) sampling data from sites that the WIV prefers not to make public.

- **Note:** This may be to preserve the WIV primacy and avoid having teams from other labs studying BatCoVs sampling there and potentially writing papers ahead of the WIV on viruses that may be found in these sites.
- As [per the description](#) (English [translation](#)):

Due to the use rights of some data (referring to the cases where the virus sequence has not been published, the virus sequence has not been uploaded to NCBI, [and the wild animal sample information of the sample collection site cannot be published](#)), if the user needs to access and use this part of the data, you can by contacting the relevant management personnel of this database, obtaining the login account password of the platform through identity verification and authentication, and logging in to the platform to use relevant data.

### **Finding: Partial funding of samples collection and sequencing via the NIH does not secure ownership of resulting data**

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- Key aspects of the WIV research were partially funded by the NIH/NIAID via EcoHealth.
- A total of \$3.6 mln was thus granted to EcoHealth [through a succession of yearly payments](#) under the NIH project 'Understanding The Risk of Bat Coronavirus Emergence'.
- Part of these grants were then spent on research projects with the WIV, [for a total of \\$598,500](#) paid to the WIV as fees for the [stated purposes](#) of:
  - conduct[ing] high-quality testing, sequencing, and analyses of field samples;
  - maintenance of cold-chains from field to lab;
  - ensuring quality control of sample storage and testing;
  - collaborating on scientific publications and programmatic reporting.
- These purposes thus include the collection and analysis (sequencing) of viral samples, whose results are stored into batvirus.whiov.ac.cn
- Interestingly these purposes also include quality control and safety issues.
- These US-funded samples and sequences were not automatically sharable - [China could typically decide what it wanted to share](#). USAID had effectively no clear ownership of the data, despite funding the EPT programs
- This was clearly highlighted [as an ambiguity and a potential issue](#) in a USAID evaluation of EPT-2:  
[underlining added]

**“USAID does not own data collected under PREDICT 2:** Information from interview respondents familiar with PREDICT 2 (including ETD respondents) and a review of the procurement documents provided to the evaluation team suggest that PREDICT 2, not USAID, holds the raw data it collects for its research and models. [This dramatically constrains the control over those data for future programing, research, and dissemination](#). An ETD respondent explained that USAID would have access to the data, and noted that “PREDICT plans to upload [the findings approved for release](#) (only a subset of samples in [four countries so far](#)) to its global website in the near future” and that they will be available to USAID.

[---]

In identifying viral pathogens, PREDICT 2 has strict protocols for protecting country data. Approval from three pertinent ministries (usually health, livestock, and wildlife) is necessary before [findings](#) are released. The evaluation team commends this approach as an avenue for ensuring country ownership. In terms of [raw data](#) collected under the project, PREDICT 2 says “the PREDICT Consortium holds the raw data collected, though USAID has access to raw data through the Agreement Officer’s Representative [AOR].” While the evaluation team is not qualified to provide a legal opinion on data rights and ownership, we believe clarity is required with respect to USAID’s legal authority over data collected, as opposed to “accessed” under PREDICT 2, [given the finite nature of the project used to collect the data and the possible future uses for those data](#)”

- In other words there is a legal ambiguity by which at the end of the EPT-2 program, USAID (and hence the US taxpayers) may not have legal access to the data from the sampling they partially funded (on top of the country's right to oppose the release of findings).
- Practically this means that
  - there is no legal way to force China to at least release the data that was collected with the financial help of USAID-PREDICT
  - with the passing of EPT-2 the ownership of non-disclosed EPT-1 and EPT-2 data may now actually fully reside with China.
  - Peter Daszak, president of EcoHealth Alliance which was involved in the EPT samplings with the WIV, said just as much in an interview:  
 "The NIH has told us not to work on this project. Obviously, we're not going to break any NIH rules. But we have an ongoing collaboration, we have data that we've gathered over 15 years of working in China — 5 years under a previous grant from the NIH — which haven't been published yet. So we need to carry on with that work."
- **Note:** This is particularly important for the WIV/PREDICT sampling trips around Yunnan such as the 2012 sampling trip at the time of the 'miners' disease in the abandoned Mojiang mine and many of the subsequent sampling trips (some of which are available on data.predict.global).

### **Finding: The aim of the projects funded by the NIH includes pathogenicity enhancement studies using unpublished viruses**

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- The actual virus research mentioned in the NIH grant was conducted in the WIV labs in cooperation with WIV researchers, and such cooperation meant alignment of research objectives between the NIH grants and the WIV.
- We can indeed see that research objectives of the EcoHealth projects detailed in the NIH grants are in line with the objectives of the Chinese programs 2013FY113500 and its successor, the '2019 Scientific Survey'.
- The objectives of the Chinese '2019 Scientific Survey' have a focus on studying biosafety risk (pathogenicity) as the cell level (cell cultures / in vitro) and at the small animal level (humanized mice / in vivo), using new viruses - meaning unpublished viruses kept in the private section of batvirus.whiov.ac.cn:

[15] (4) Complete the pathogenic characteristics analysis of 10 important new viruses/strains, which for at least 5 important pathogenic new viruses should be based on a biosafety risk assessment at the cell level and small animal level.

- This, as expected, is in line with the descriptions of the virus experiment projects in the EcoHealth NIH grants:
  - The latest NIH grant was for project 2R01AI110964-06, with a budget start date of 24<sup>th</sup> July 2019 and a budget end date of 30<sup>th</sup> June 2021. The objectives of that latest project include:  
 Aim 3. In vitro and in vivo characterization of SARSr-CoV spillover risk, coupled with spatial and phylogenetic analyses to identify the regions and viruses of public health concern. We will use S protein sequence data, infectious clone technology, in vitro and in vivo infection experiments and analysis of receptor binding to test the hypothesis that % divergence thresholds in S protein sequences predict spillover potential.
  - The previous grant for project 5R01AI110964-05 (start date: 1<sup>st</sup> Jun 2018, end date: 31<sup>st</sup> May 2019) which included in its objectives:

3. Test predictions of CoV inter-species transmission. Predictive models of host range (i.e. emergence potential) will be tested experimentally using reverse genetics, pseudovirus and receptor binding assays, and virus infection experiments across a range of cell cultures from different species and humanized mice.

### Finding: Financial support and membership of EVAg is at odds with the unavailability of batvirus.whiov.ac.cn and the lack of transparency of the WIV

- The WIV is a [participant in EVAg](#) (European Virus Archive (goes) Global) - a [5-year international cooperation project](#) funded under the European research and innovation programme 'Horizon 2020' which has been succeeded by 'EVA Global'.
- Under that cooperation project the WIV has already received and may still receive European money in the form of two grants (under EVAg and EVA Global). The [total amount deliverable](#) to the WIV under the 2 grants is around Euro 220k.
- The [stated objective](#) of EVAg is to 'generate the largest collection of mammalian viruses in the world and move beyond the current state-of-the-art to provide an increasingly valuable resource and service to the world's scientific community'. Hence the non-availability of the fundamental WIV database is fully at odds with the objectives of EVAg, to which the WIV is a participant and as such a recipient of European grants.
- This has been duly noted by the European Commission; on the 9<sup>th</sup> Dec 2020 [in response to a question by a Dutch member](#) of the European parliament, [Commissioner Gabriel reported that](#):  

"a lack of communication by WIV was observed in the period from February to October 2020" and that "for this reason, an interim report on its activities has been requested".

### Finding: External access to batvirus.whiov.ac.cn ended on 12<sup>th</sup> Sep 2019

- Batvirus.whiov.ac.cn had been online for a few years, saw a version 2 released in June 2019, went inactive for a week [during the second half of August 19](#), before [becoming definitely inaccessible](#) (out of the WIV at least) on the 12<sup>th</sup> Sep 19. It was online intermittently after this date [from mid-December 2019](#), and occasionally [until February 2020](#), but was not accessed from outside of the WIV after 12 September 2019.
- While the non-WIV DBatVir and DRodVir components can still be accessed independently, all the WIV generated data, and especially the unpublished data in the password protected section was thus rendered inaccessible.
- No reason can be found for the week of inactivity in August.
- There have been repeated contradictions by key people about the reasons for the final removal of the DB in Sep 2019, and about the exact content of that DB:
  - In Dec 2020, Pr. Shi Zhengli explained [in a BBC interview](#) that access to the DB was [stopped](#) to prevent cyber security attacks.
  - On the 26<sup>th</sup> January 2021, Pr. Shi Zhengli confirmed again that the database has been taken offline 'during Covid-19 pandemic' in an email answer to [Tommy Cleary](#).
  - On the 10<sup>th</sup> March 2021, during a [Chatham House interview](#), Peter Daszak repeated the exact reason given by Shi Zhengli in her email to Tommy Cleary above.
    - **These three statements do not make any sense since the main database was taken offline on the 12 Sep 2019, 3 months at least before the official start of the pandemic.** So either the reason given for taking the database off is not correct (which raises more questions), or the statement points at an outbreak in Sep 2019.
    - In any case, the 61.5MB MySQL DB could easily be hosted by safe servers in China, segregated from the WIV network. Databases of similar size are widely available [on the CSData website where the description is located](#). It should have been possible in any case to simply hand over a USB key or drive with the DB.
  - In the same email to [Tommy Cleary](#), Shi Zhengli asserts that all sampling details sequences contained in the database (partial or full) have been already published
    - **This is in full contradiction** with the description of the DB and the existence of a password protected section for unpublished viruses. [See description](#) (English [translation](#)):  

[Due to the use rights of some data \(referring to the cases where the virus sequence has not been published, the virus sequence has not been uploaded to NCBI, and the wild animal sample information of the sample collection site cannot be published\), if the user](#)



needs to access and use this part of the data, you can by contacting the relevant management personnel of this database, obtaining the login account password of the platform through identity verification and authentication, and logging in to the platform to use relevant data.

- This is also in contradiction with a [message from P. Daszak](#) on the 10<sup>th</sup> Dec 2020 where he wrote that:

"Thanks to @RudyGuliani's poorly thought out interference, a grant to @EcoHealthNYC funded under @realDonaldTrump was terminated by @NIHDirector & **now we can't get access to critical samples** that would help us understand the origins of COVID & could be used to improve vaccines'

and also with a previous [interview with NPR](#) in April 2020, where P. Daszak explained that:

"You can't just turn up as an American and say, 'I want to find out what viruses you've got,'" says Daszak. "You have to work with local collaboration and with the permission of the governments."

- Further, during the [Chatham House interview](#) of the 10<sup>th</sup> March 2021, Peter Daszak explained that the international part of the joint-team did not request to have access to that main database, because he told them that he essentially knew what was in that DB and that there were no virus closer to RaTG13 there.

- This does not align with previous statements where Peter Daszak reiterated that without cooperation with the WIV, foreign scientists could not get access to the private section of the DB (especially for the extensive sampling work done directly by the WIV or CDC, without Echo Health Alliance/PREDICT involvement on the ground). See statement above for instance.
- This also ignores the key fact that the very purpose of the current research at the WIV was to study pathogenicity of new (unpublished) viruses, as detailed in the [next section](#).

Per [2019 Scientific Survey](#) (initiated July 2019):

[15] (4) Complete the pathogenic characteristics analysis of 10 important new viruses/strains, which for at least 5 important pathogenic new viruses should be based on a biosafety risk assessment at the cell level and small animal level.

- Incidentally, in the same Chatham interview, Peter Daszak incorrectly described the DB as being an Excel spreadsheet when it is actually a relational database (a [61.5MB MySQL DB](#)).

### **Finding: Untimely changes to the database description on 30<sup>th</sup> Dec 2019 may betray some sensitive research**

- While the database itself was not accessible outside of the WIV after the 12<sup>th</sup> Sep 2019, its description factsheet still was accessible until fairly recently.
- For some unexplained reason, on the 30<sup>th</sup> Dec 2019 - the exact day whistleblower doctors in Wuhan raised the alarm - a new version of the database factsheet was uploaded at the time Pr. Shi Zhengli was on the Shanghai to Wuhan high speed night train. The changes are [highlighted here](#).
  - We do not know whether the DB data itself was updated on that occasion - the data it contained had not been accessible for external parties since the 12<sup>th</sup> Sep 2019 in any case.
  - The writer of the factsheet may be the WIV researcher Li Bei, as she is described as being responsible for the text writing in the factsheet itself. She may have uploaded the new factsheet herself or Pr. Shi Zhengli may have done so while on the train.
- It is difficult to understand why Pr Shi Zhengli would push an update of just the database description on such an eventful day, if there wasn't a good reason:

'The mysterious patient samples arrived at the Wuhan Institute of Virology at 7 P.M. on December 30, 2019. Moments later Shi Zhengli's cell phone rang. It was her boss, the institute's director. The Wuhan Center for Disease Control and Prevention had detected a novel coronavirus in two hospital patients with atypical pneumonia, and it wanted Shi's renowned laboratory to investigate. If the finding was confirmed, the new pathogen could pose a serious public health threat—because it belonged to the same family of viruses as the one that caused severe acute respiratory syndrome (SARS), a disease that plagued 8,100 people and killed nearly 800 of them between 2002 and 2003. **"Drop whatever you are doing and deal with it now,"** she recalls the director saying.'

Source: [Scientific American](#) - originally published 24<sup>th</sup> Apr 20.

- One possible scenario is that she updated the DB itself and at the same time pushed an update to the description that was anyway pending.
- Another scenario is that the timing of the changes in the description is intentional and meaningful. As discussed below (Section 1.b). In that line one could imagine that the changes may try to dissociate the database from its relation to the [2019 Scientific Survey](#) (initiated July 2019) as the objectives of that project include an **item that should raise attention**:

[15] (4) Complete the pathogenic characteristics analysis of 10 important new viruses/strains, which for at least 5 important pathogenic new viruses should be based on a biosafety risk assessment at the cell level and small animal level.

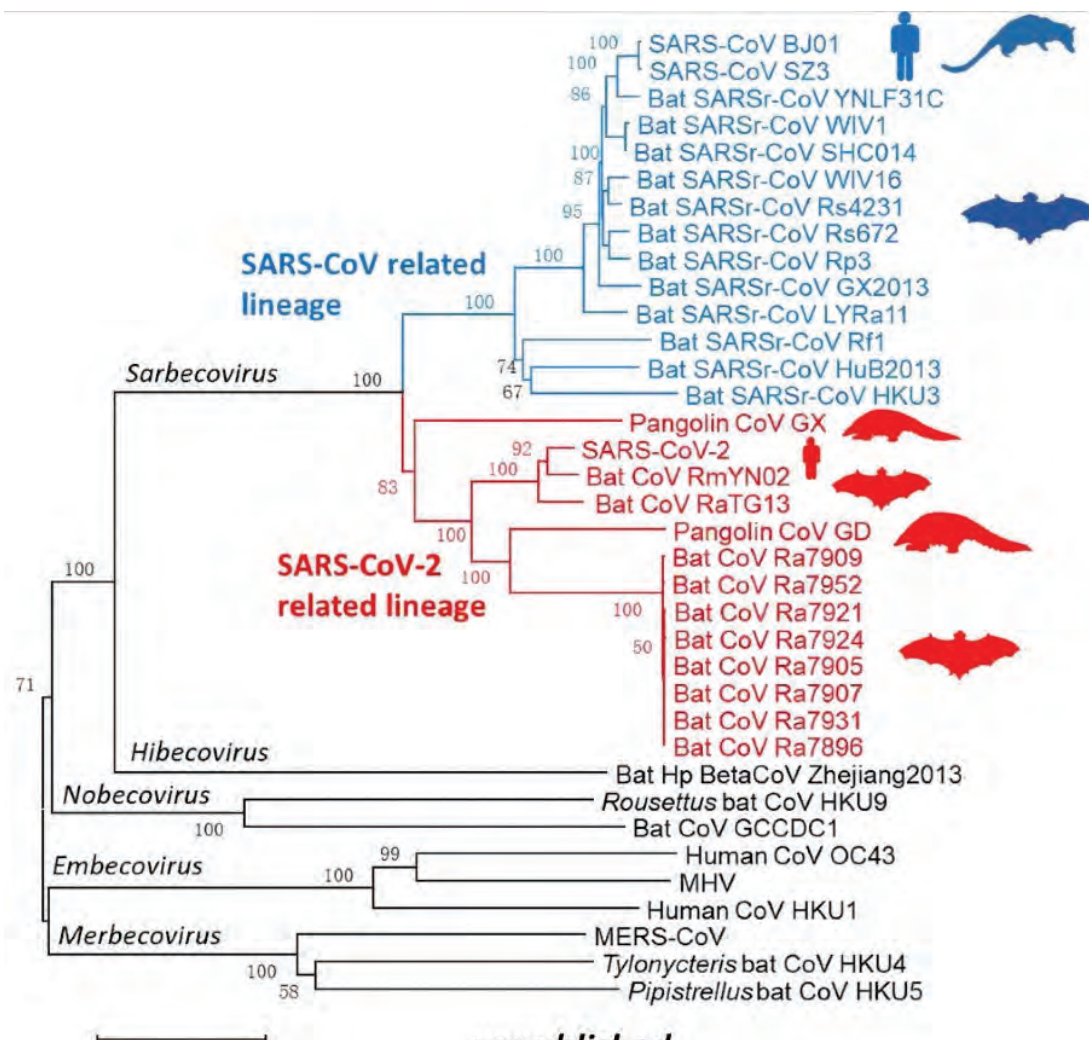
- That is indeed a lot of dedicated pathogenicity work on likely undisclosed viruses (that's very likely what new means - publication if any would follow the pathogenicity work)
- Good candidates for new viruses/strains could well include some of the recently mentioned 8 BatCoVs from the same clade as RaTG13.
- Additionally it is advanced work using humanized small animals (likely mice).
- The Jul 19 date for the inception of the tendering process for the 2019 Scientific Survey in China does not mean that no such research took place before that at the WIV or elsewhere. This kind of pathogenicity research was not particularly new to the WIV. In fact the 2019 Scientific Survey just builds on and focalizes existing work and provides additional funding for more of that work - right at a time when the US were cutting their own funding through USAID-PREDICT EPT.

#### **Finding: [Batvirus.whiov.ac.cn](#) holds essential information on SARS-CoV-2 origins**

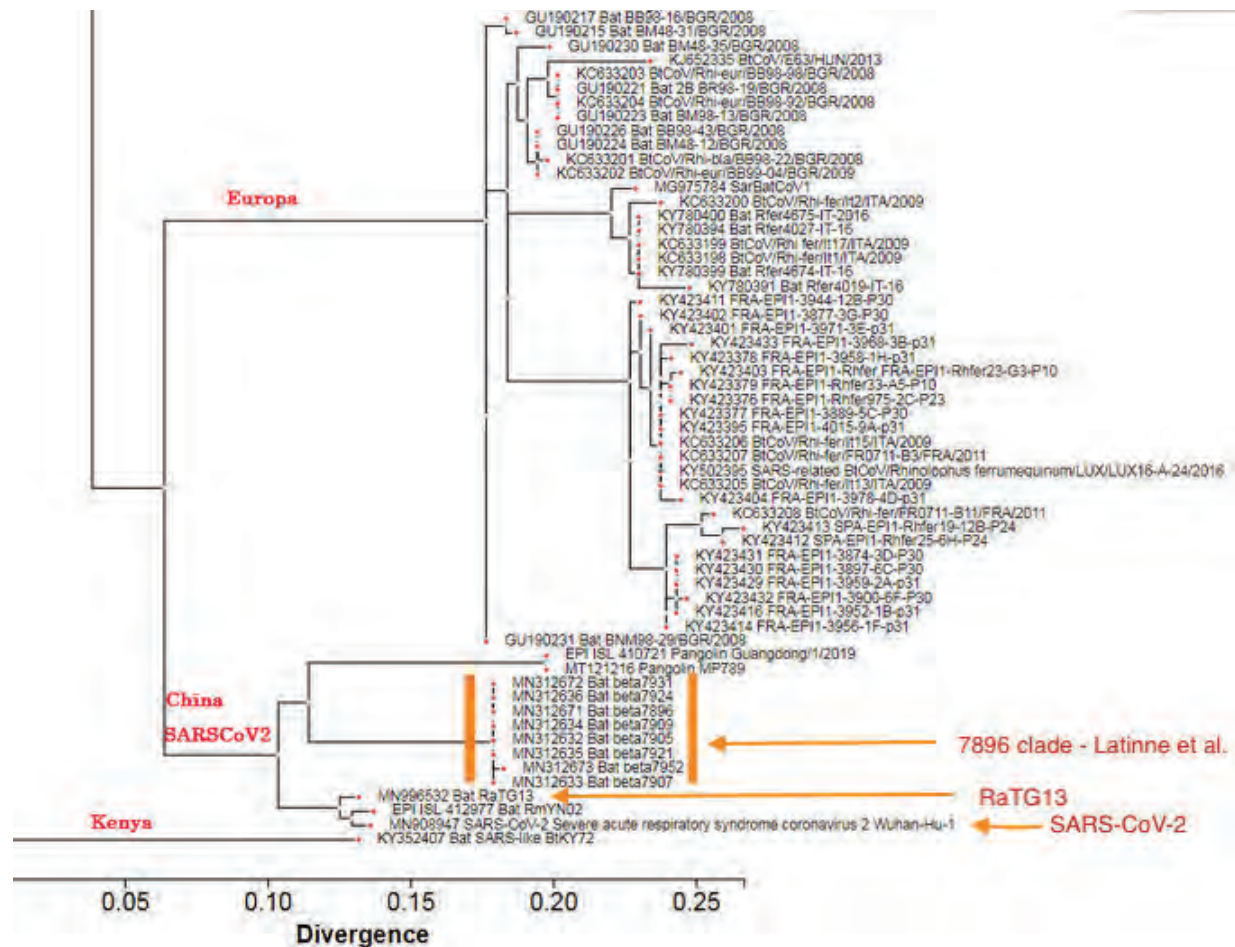
- There are estimated to be at least 100 unpublished sequences of bat betacoronaviruses in [Batvirus.whiov.ac.cn](#), which urgently need to be accessed by international scientists in order to investigate the origins of SARS-CoV-2:
- These include in particular:
  - WIV6 and WIV15 BatCov isolates which have never been made public, but whose existence can be deduced from gaps in the existing series of isolates mentioned in research papers.
  - 8 beta BatCoVs related to SARS, sampled from Yunnan, only recently mentioned by Shi Zhengli in an [Addendum to a Nature paper](#) and in an [online presentation](#) and never published despite being of the highest relevance.
    - They are likely the same as the 8 from the 7896 clade published [as part of a batch of 630 viruses of Latinne et al](#) without further details. On that occasion only the RdRp portions were uploaded to GenBank on the [13 Aug 2019](#) (around 360 bases, not the full sequences of the viruses).
    - That clade is very close to RaTG13 (the closest relative of SARS-CoV-2), so should offer some very important clues as to but is not discussed in the literature.
    - Questions as to why no more attention is being paid to that essential clade [are not being answered](#).
  - These 8 plus WIV5 and WIV6 may particularly make good candidates for the objective 15.4 of the 2019 Scientific Survey listed above.

- This also includes all the undisclosed BatCoV samples and sequences collected with funding from USAID-PREDICT, particularly in Yunnan.
- **Note:** blocking access to these samples and related sequences is a very effective obstruction of scientific efforts to investigate the origin of SARS-CoV-2. With this information scientists could build a better phylogeny tree for SARS-CoV-2 which could point to the likely time and location of the virus emergence. In particular:
  - The RdRp of bat betacoronavirus 7896 and almost identical RdRp sequences of seven other viruses have been published to GenBank. They are some of the most similar known viruses to SARS-CoV-2, but their Spikes have not been published.
  - Due to the presence of "7896" in the names of the RaTG13 amplicon sequences, we have reason to believe that RaTG13 may be a combination of BtCoV/4991 and viruses from the 7896 clade, rather than the full sequence of BtCoV/4991. Access to this database would allow us to verify this. It is not standard practice to name sequences purportedly from one virus after a closely related virus. As the 7896 clade appear to be further from SARS-CoV-2 than BtCoV/4991 is, using sequences from the 7896 clade in the RaTG13 consensus sequence rather than BtCoV/4991 sequences would be likely to make RaTG13 appear significantly less similar to SARS-CoV-2 than the full BtCoV/4991 sequence would have been.

Phylogenetic tree from a [video presentation by Shi Zhengli](#) showing the 'new' 7896 beta-BatCov clade:  
It seems that it is [based on more than the usual short RdRp sequence](#)





**Extended RdRp phylogenetic tree with 7896 class:**Built using [data](#) from the [Latinne et al paper](#) (anonymous contribution)**Sampling information on the 7896 clade from Yunnan:**

Viruses	Accessi	Genera	Species	Cite	Month	Group	Sam	cave prov	collecti	Modific	Prepar
Bat betacoronavirus isolate 7896	MN312671	Betacoronavirus	SARS-like	Latinne et al. (2020)	Aug-20	WIV+EcoH	7896-2	Yunnan	May-15	01-Jun-20	13-Aug-19
Bat betacoronavirus isolate 7905	MN312632	Betacoronavirus	SARS-like	Latinne et al. (2020)	Aug-20	WIV+EcoH	7905	Yunnan	May-15	01-Jun-20	
Bat betacoronavirus isolate 7907	MN312633	Betacoronavirus	SARS-like	Latinne et al. (2020)	Aug-20	WIV+EcoH	7907	Yunnan	May-15	01-Jun-20	
Bat betacoronavirus isolate 7909	MN312634	Betacoronavirus	SARS-like	Latinne et al. (2020)	Aug-20	WIV+EcoH	7909	Yunnan	May-15	01-Jun-20	
Bat betacoronavirus isolate 7921	MN312635	Betacoronavirus	SARS-like	Latinne et al. (2020)	Aug-20	WIV+EcoH	7921	Yunnan	May-15	01-Jun-20	
Bat betacoronavirus isolate 7924	MN312636	Betacoronavirus	SARS-like	Latinne et al. (2020)	Aug-20	WIV+EcoH	7924	Yunnan	May-15	01-Jun-20	
Bat betacoronavirus isolate 7931	MN312672	Betacoronavirus	SARS-like	Latinne et al. (2020)	Aug-20	WIV+EcoH	7931-2	Yunnan	May-15	01-Jun-20	
Bat betacoronavirus isolate 7952	MN312673	Betacoronavirus	SARS-like	Latinne et al. (2020)	Aug-20	WIV+EcoH	7952-2	Yunnan	May-15	01-Jun-20	

Blasting of [Ra7952](#) RdRp showing similarity between the 8 members of the 7896 clade (MN3123xx):

Sequences producing significant alignments									
Download <span>▼</span> <span>New</span> Select columns <span>▼</span> Show <span>10</span> <span>▼</span> <span>?</span>									
<input checked="" type="checkbox"/> select all	10 sequences selected								
		<a href="#">GenBank</a>	<a href="#">Graphics</a>	<a href="#">Distance tree of results</a>	<span>New</span>	<a href="#">MSA Viewer</a>			
	Description	Scientific Name	Max Score	Total Score	Query Cover	E value	Per. Ident	Acc. Len	Accession
<input checked="" type="checkbox"/>	Bat betacoronavirus isolate 7952 RNA-dependent RNA polymerase (RdRp) gene, pa...	Bat betacoro...	743	743	100%	0.0	100.00%	402	<a href="#">MN312673.1</a>
<input checked="" type="checkbox"/>	Bat betacoronavirus isolate 7931 RNA-dependent RNA polymerase (RdRp) gene, pa...	Bat betacoro...	737	737	100%	0.0	99.75%	402	<a href="#">MN312672.1</a>
<input checked="" type="checkbox"/>	Bat betacoronavirus isolate 7896 RNA-dependent RNA polymerase (RdRp) gene, pa...	Bat betacoro...	730	730	99%	0.0	99.50%	591	<a href="#">MN312671.1</a>
<input checked="" type="checkbox"/>	Bat betacoronavirus isolate 7924 RNA-dependent RNA polymerase (RdRp) gene, pa...	Bat betacoro...	730	730	99%	0.0	99.50%	589	<a href="#">MN312636.1</a>
<input checked="" type="checkbox"/>	Bat betacoronavirus isolate 7909 RNA-dependent RNA polymerase (RdRp) gene, pa...	Bat betacoro...	730	730	99%	0.0	99.50%	592	<a href="#">MN312634.1</a>
<input checked="" type="checkbox"/>	Bat betacoronavirus isolate 7907 RNA-dependent RNA polymerase (RdRp) gene, pa...	Bat betacoro...	730	730	99%	0.0	99.50%	597	<a href="#">MN312633.1</a>
<input checked="" type="checkbox"/>	Bat betacoronavirus isolate 7921 RNA-dependent RNA polymerase (RdRp) gene, pa...	Bat betacoro...	725	725	99%	0.0	99.50%	588	<a href="#">MN312635.1</a>
<input checked="" type="checkbox"/>	Bat betacoronavirus isolate 7905 RNA-dependent RNA polymerase (RdRp) gene, pa...	Bat betacoro...	682	682	93%	0.0	99.47%	566	<a href="#">MN312632.1</a>
<input checked="" type="checkbox"/>	Severe acute respiratory syndrome coronavirus 2 isolate 190017 genome assembly...	Severe acut...	603	603	99%	4e-168	93.77%	29903	<a href="#">LR862443.1</a>
<input checked="" type="checkbox"/>	Severe acute respiratory syndrome coronavirus 2 isolate 180051 genome assembly...	Severe acut...	603	603	99%	4e-168	93.77%	29903	<a href="#">LR861674.1</a>

### Finding: Questions as to the unavailability of batvirus.whiov.ac.cn are not being properly answered

- In a [BBC interview](#) Pr. Shi Zhengli is on record explaining that the WIV database was offline due to security reasons:

She told the BBC that the WIV's website and the staff's work emails and personal emails had been attacked, and the database taken offline for security reasons.

However it is extremely difficult to imagine why a copy of the database (or at least of the non-password protected portion) could not be safely put back online, if necessary on a totally different network unconnected to the WIV.

- In the same interview, she adds that:

"All our research results are published in English journals in the form of papers," she said. "Virus sequences are saved in the [US-run] GenBank database too. It's completely transparent. We have nothing to hide."

Her statement is demonstrably false. As mentioned before Peter Daszak, president of EcoHealth Alliance which was involved in the EPT samplings with the WIV, said just [as much in an interview](#):

"[...] we have an ongoing collaboration, we have data that we've gathered over 15 years of working in China — 5 years under a previous grant from the NIH — which haven't been published yet. So we need to carry on with that work."

And as pointed previously: Batvirus.whiov.ac.cn holds a password protected section for data that was not to be freely shared. That private data includes:

- (1) Sampling data of viruses not yet sequenced
  - (2) Sequences of viruses that have not yet been the object of publication.
  - (3) Sampling data from sites that the WIV prefers not to make public.
- Two separate direct enquiries to the WIV by members of the DRASTIC team (details are confidential) were met with inconsistent answers:
    - One answer gave cyber security issues as the reason for a temporary unavailability.
    - Another answer simply mentioned that the database was unavailable because it was being updated.
  - Questions to [CSDData](#) which hosted the description of the database and a live link to hit, as to why the link was not working, have not been answered.



**Finding: The suspension of the availability of batvirus.whiov.ac.cn is contrary to Chinese law**

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The legal requirements and conditions for the publications of Scientific data are set in the 'Notice of the General Office of the State Council on Printing and Distributing Scientific Data Management Measures' ([Guobanfa \(2018\) No. 17](#)).

Of particle relevance are:

**Article 19**

The scientific data formed by government budget funding shall be organized in accordance with the principle of opening as the norm and not being the exception.

The competent department shall organize the compilation of the scientific data resource catalogue. The society and relevant departments are open to sharing, and the military-civilian sharing channels for scientific data are unblocked. Except for special provisions in national laws and regulations.

**Article 20**

The legal entity shall classify and classify scientific data, clarify the confidentiality level and confidentiality period, opening conditions, open objects and review procedures of scientific data, publish an open catalog of scientific data as required, and download, share or customize services through online And other ways to open to the community.

**Article 31**

For forgery of data, infringement of intellectual property rights, failure to submit data in accordance with regulations, etc., the competent department may order relevant units and responsible persons to order rectification, report criticism, punishment, etc., or give administrative penalties according to law.

Units and individuals violating relevant laws and regulations of the state shall be held accountable according to law.

Since the public part of batvirus.whiov.ac.cn was previously accessible, it is reasonable to conclude that it fell under the conditions for 'opening' of Article 19, and was not the subject of 'special provisions in national laws and regulations'. Once classified as non-confidential, it should be available as per Article 20, a breach of which is a violation of the law as per Article 31.



Hence the suspension of the availability of the public part of batvirus.whiov.ac.cn is a breach of the applicable Chinese law.

## 1.b Changes in the Description of the DB (30th Dec 2019):

The database description was separately hosted on the [CSData website](#), which is the main portal and index of Chinese scientific databases. The changes in the title and content of the database factsheets have been [highlighted in this document](#).

The database was also very likely used to answer the [national 2019 Scientific Survey project](#) started in July 2019 by the Chinese Ministry of Science & Technology. We note that the changes in the CSData description limit the scope of the database to Bats and Rodents, away from the previous larger 'Wild Animals' with also mentions of 'Insects'. It also removes a mention of cross-species infection. Overall this distances it from the 2019 Scientific Survey project.

**Example of changes** (refer to [comparison](#) for full changes):

VERSION 2 - 17 <sup>th</sup> JULY 2019 (ZH2)	VERSION 4 - DECEMBER 30 <sup>th</sup> 2019 (ZH4)
 CN: 11-6035 / N ISSN: 2096-2223 subscriptionPaper submissionhistory Scientific big data engineering area I paper (under review) • Version ZH2 download <b>Characteristic Database of Viruses Carried by Wild Animals</b> <b>Wildlife-borne Viral Pathogen Database</b> Tang Yijie, Li Bei, Zhou Zijian, Zhu Yan, Zhao Kai, MA Li-li, Wuyue Wei, Shi Zhengli Tang Yijie, Li Bei, Zhou Zijian, Zhu Yan, Zhao Kai, Ma Lili, Wu Yuewei, Shi Zhengli Visit the dataset DOI: 10.11922 / csdata.2019.0018.zh	 CN: 11-6035 / N ISSN: 2096-2223 subscriptionPaper submissionhistory Scientific Big Data Engineering Area II Paper (Published) • Version ZH4 Vol 4 (4) 2019 download <b>Database of pathogens of bat and mouse origin</b> <b>Bat and rodent-borne viral pathogen database</b> Tang Yijie, Li Bei, Zhou Zijian, Zhu Yan, Zhao Kai, MA Li-li, Wuyue Wei, Shi Zhengli Tang Yijie, Li Bei, Zhou Zijian, Zhu Yan, Zhao Kai, Ma Lili, Wu Yuewei, Shi Zhengli Visit the dataset DOI: 10.11922 / csdata.2019.0018.zh PID: 21.86101.1 / csdata.2019.0018.zh
humans, predict hot spots of <b>emerging infectious diseases</b> , and provide theoretical basis and technical support for disease prevention and control. <b>Keywords:</b> wild animal samples; viral pathogen data, emerging infectious diseases; cross-species infection	humans, predict hot spots of <b>emerging infectious diseases</b> , and provide theoretical basis and technical support for disease prevention and control. <b>Keywords:</b> bat; rat; virus; database
<b>Abstract &amp; Keywords</b> <b>Abstract:</b> Cross-species infection of viruses with wildlife origin is one of major reasons for emerging viral diseases in humans. Therefore, it is especially important to construct database for wildlife-borne viral pathogens based on collection and collation of wildlife samples and corresponding viral pathogen data. Through establishment of standard metadata description, this database includes up to 20,000 collated and processed data from wildlife samples collected from many countries and several provinces and regions throughout China, and serves institutes and universities in China and other countries that conduct researches related to wildlife viral pathogens. The users can perform query based on wildlife species, sample type, species distribution, etc. according to their requirement.	<b>Abstract &amp; Keywords</b> <b>Abstract:</b> Cross-species infection of viruses with wildlife origin is one of the major origins for emerging viral diseases in mankind. Therefore, it is especially important to build a database for wildlife-borne viral pathogens based on collection and collation of wildlife samples and corresponding viral pathogen data. Through establishment of standard metadata description, this database includes up to 20,000 collated and processed data from bat and rodent samples collected from many countries and several provinces and regions throughout China, and serves institutes and universities in China and other countries that conduct researches related to wildlife viral pathogens. The users can perform query based on bat and rodent species, sample type, species distribution, etc., according to their need.

To understand how these changes may relate to the 2019 Scientific Survey project, here is the relevant section of that project description where the precise words that were removed from the database factsheet on the 30<sup>th</sup> Dec 2019 are highlighted in red.

## 15. Scientific investigation of virus carriers of main natural epidemic sources in China

Work content: focus on the systematic background screening of virus pathogens carried by **major wild animals** (bats, mice, birds, etc.) and **insect vectors** (ticks, mosquitoes) in China; investigate the range of virus carried by major animal hosts and vectors, and determine the natural geographical extent in the nation. The distribution of sexually potent pathogens; the use of biosafety platforms to isolate and identify new viruses; to conduct pathogenic basic characteristics research on important pathogenic new viruses; establish a national strategic virus pathogen resource library and shared database, and carry out resource and information sharing services.

Evaluation indicators: (1) Submit a survey report on the lineage, genetic characteristics and geographic distribution of bats, mice, birds, ticks, mosquitoes and other virulent virus pathogens in key areas in China; (2) Obtain more than 100 new viruses/strains Genome; (3) Complete the isolation and identification of 50 important viral pathogens and standardized collection and preservation; (4) **Complete the pathogenic characteristics analysis of 10 important new viruses/strains, which for at least 5 important pathogenic new viruses should be based on a biosafety risk assessment at the cell level and small animal level;** (5) Establish a standardized virus pathogen resource library and shared database.

## 1.c Importance of the research objectives of the 2019 Scientific Survey:

### 1.c.1 Likely work on undisclosed viruses:

As already mentioned, the 15.4 objectives above concern new viruses, so typically viruses on which no research has been published yet, and therefore most likely held in the password-protected section of the DB.

As also mentioned, good candidates could be found within the 8 beta BatCoV viruses of the 7896 clade which are close relatives of RaTG13 - for some reason still not fully sequenced and not the object of any publication by the WIV.

### 1.c.2 Biosafety risk assessment at the cell level:

This typically means introducing a virus - be it natural viruses, or chimeric [formed by combination of genetic material of some viruses] - into human and other animal cell lines to see if they replicate or attach to human ACE2 in vitro.

### 1.c.3 biosafety risk assessment at the small animal level:

This typically means work on humanized mice expressing the human ACE2 protein. Such pathogenicity studies have been going on for years at the WIV by Pr. Shi Zhengli and others at the WIV such as Ben Hu. See [example](#) (English [translation](#)).

The screenshot shows a web page from MedSci (梅斯) with a navigation bar including News, guide, tool, service, and a search bar. The main header features the title "Pathogenicity of two new bat SARS-related coronaviruses to transgenic mice expressing human ACE2" and lists the person in charge (Hu Ben), supporting unit (Wuhan Institute of Virology, Chinese Academy of Sciences), and year of approval (2018). Below this is a table titled "Project Description" with the following details:

Project name	Pathogenicity of two new bat SARS-related coronaviruses to transgenic mice expressing human ACE2
Project approval number	31800142
Subject classification	C010802 Life Sciences _ Microbiology _ virology _ animal virology
Type of funding	Youth Science Fund Project
principal	Hu Ben
Supporting unit	Wuhan Institute of Virology, Chinese Academy of Sciences
Year of approval	2018
Start and end time	201901-202112
Approved amount	250 thousand yuan
Summary	No data

Some pathogenicity research may also involve chimera viruses where various genetic variations of a natural backbone (simulating possible recombinations in nature) are studied. Such research was pioneered by Dr Ralph Baric (who is [on record](#) as saying that only the WIV archives can clarify the origins of Covid-19) and was commonly carried out at the WIV.

A good summary of these research directions is available [here](#):

Probably the largest reported number of novel chimeric viruses created was described in a 2017 paper from the Shi group at WIV, in which the authors reported creating eight chimeric viruses using WIV1 as a backbone and transplanting into it various RBDs from bat SARS-like viruses. These viruses were collected over a span of 5 years from the same cave near Kunming, Yunnan Province, where the Shi group originally found Rs3367 and RsSHC014. Only two of the eight live chimeric viruses were successfully rescued, and those two strains were found to possess the ability to bind to the human ACE2 receptor, as confirmed by experiments in hACE2-expressing HeLa cells and RT-PCR quantification of viral RNA.

## 1.d Database Events



### 1.d.1 Timeline:

- **Apr 2019:** database version 1 [is released](#) and is accessed on a near daily basis
- **Jun 2019:** database version 2 is released.
  - It includes a password protected section for yet unpublished virus sequences.
  - [6.4GB](#) was downloaded from the 61.5MB SQL database from [within the China Science and Technology Network](#), (CSTN), nearly all [from Beijing](#), equivalent to 100 DB downloads.
- **16<sup>th</sup>- 22<sup>nd</sup> Aug 19:** odd [nil usage](#)
- **12<sup>th</sup> Sep 2019:** database seems [to be taken offline](#) (for non-WIV access), [see also this link](#). No reason for the gap and then the removal.
  - There is no access anymore either via <http://batvirus.whiov.ac.cn> or <http://www.sciencedb.cn/dataSet/handle/768>
  - Database has not been put back online (for external access) since then.
  - In [September](#) it was accessed almost entirely by the WIV and non-CSTN users. This indicates that the WIV were accessing data on viral pathogens from the program that identified RaTG13 well into September 2019. A full breakdown of the access records for September is available [in this table](#), based on data gathered from the [Chinese Scientific Database monitoring portal](#).
- **Since 12<sup>th</sup> Sep 2019:** records show the database being [online very intermittently](#) until at least early 2020, presumably without a DNS address and possibly only accessible from the WIV.
- **30<sup>th</sup> Dec 2019:** database title and description are modified - the day the [coronavirus breakout became public](#).



## 1.d.2 Zoom: Access Interruption

Both <http://batvirus.whio.ac.cn> and <http://www.sciencedb.cn/dataSet/handle/768> are now irresponsive.

Before 12 <sup>th</sup> Sep 19 (snapshot from June 19)	After 12 <sup>th</sup> Sep 19
	 <p><b>WEBSITE URLS:</b></p> <p><a href="http://www.sciencedb.cn/dataSet/handle/768">http://www.sciencedb.cn/dataSet/handle/768</a></p> <p><a href="http://batvirus.whio.ac.cn/">http://batvirus.whio.ac.cn/</a></p>

batvirus.whio.ac.cn points to [159.226.126.81](http://159.226.126.81) which happens to be the same machine as for [www.viruses.nsd.cn](http://www.viruses.nsd.cn) ([159.226.126.6](http://159.226.126.6)).

```
PING batvirus.whio.ac.cn (159.226.126.81): 56 data bytes
Request timeout for icmp_seq 0
Request timeout for icmp_seq 1
Request timeout for icmp_seq 2
Request timeout for icmp_seq 3
Request timeout for icmp_seq 4
Request timeout for icmp_seq 5
Request timeout for icmp_seq 6
Request timeout for icmp_seq 7
^C
--- batvirus.whio.ac.cn ping statistics ---
9 packets transmitted, 0 packets received, 100.0% packet loss

PING www.viruses.nsd.cn (159.226.126.6): 56 data bytes
Request timeout for icmp_seq 0
Request timeout for icmp_seq 1
Request timeout for icmp_seq 2
Request timeout for icmp_seq 3
Request timeout for icmp_seq 4
Request timeout for icmp_seq 5
Request timeout for icmp_seq 6
^C
--- www.viruses.nsd.cn ping statistics ---
8 packets transmitted, 0 packets received, 100.0% packet loss
```



## 2. WIV: Sample resource management portal and DBs - [www.virus.org.cn](http://www.virus.org.cn)

### 2.a Summary:

Specifically:

- [www.virus.org.cn](http://www.virus.org.cn) is a portal of 15 databases, all of which are now offline as well as the portal
- Most likely these DBs are either derived from or form part of [batvirus.whiov.ac.cn](http://batvirus.whiov.ac.cn).

Then as already established for [batvirus.whiov.ac.cn](http://batvirus.whiov.ac.cn):

- These WIV DBs likely hold essential information on SARS-CoV-2 origins
- Partial funding via USAID-PREDICT of sample collections that inform some of these DBs is at odds with their unavailability
- Partial funding of WIV research by the NIH that may inform some of these DBs is at odds with their unavailability
- Financial support and membership of EVAg is at odds with the unavailability of [batvirus.whiov.ac.cn](http://batvirus.whiov.ac.cn) and the lack of transparency of the WIV

### 2.b Description:

The [www.virus.org.cn](http://www.virus.org.cn) was a product of the National Virus Resource Center (NVRC, 国家病毒资源库), which is affiliated to the WIV. It was essentially a WIV web portal which gave access to several key databases.

<http://www.viruses.nscd.cn> (mentioned in <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6178075/>) and [www.virus.org.cn](http://www.virus.org.cn) seem to have been pointing to the same portal.

It is quite likely that these DBs are either derived from or form part of [batvirus.whiov.ac.cn](http://batvirus.whiov.ac.cn).

As per its former 'About' page:

#### **Microbial Strain Collection (China Common Virus Collection):**

1. The Center for the Collection of Microorganisms and Viruses (VCCC) and the "China Common Virus Collection (CCGVCC)", "The Center for Common Microbiology (Virus) of the Chinese Microbial Culture Collection Management Committee", and the "Chinese Academy of Sciences Type Culture Collection Committee Virus Library"
2. Founded in 1979, it is affiliated to the Wuhan Institute of Virology, Chinese Academy of Sciences. It was registered with the International Culture Collection Committee (WFCC) in 1989 and was included in the 6 national collections of pathogenic microorganisms (viruses) for human infection by the National Health and Family Planning Commission in 2013. One of the institutions: the Microbial Strain Collection Center of Wuhan Institute of Virology, Chinese Academy of Sciences.
3. It is a comprehensive research center integrating virus resource collection and preservation, virus biotechnology research and development, systematic virology and bioinformatics research.
4. With its significant advantages in the variety, large number, and high level of biosafety of preserved virus resources, it has the largest virus depository in Asia, with approximately 1,200 strains of various virus isolates. The live viruses stored in the library cover human medical viruses, zoonotic viruses, animal viruses, insect viruses, plant viruses, bacteriophages, environmental microorganisms, virus-sensitive cell banks, and virus genetic resource banks.
5. It has created the country's only "Chinese Virus Specimen Museum" with modern display methods, integrating discipline, characteristics and popular science. It is the first batch of "National Youth Science and Technology Activity Demonstration Base".
6. **Supported by the European Union's H2020 plan**, it is one of the core cooperation units of the European Virus Resource Bank-Going Global (EVAg).

Note that the 'China Common Virus Collection' and the related database were part of EVAg and supported by grants from the European Union under the Horizon 2020 plan (see [Finding](#) under '1. WIV: Bat and rodent borne viral pathogens - batvirus.whiov.ac.cn' for details of these grants).

The portal and all the databases are now offline. See [www.virus.org.cn/resource](http://www.virus.org.cn/resource) for a capture of the site before it went offline. As per its description in the top right of that above page:

The live viruses preserved in the library include human medical viruses, zoonotic viruses, livestock and poultry viruses, insect viruses, plant viruses and bacteriophages. A virus-sensitive cell bank and a virus genetic resource bank have been established. A digital management system has been implemented, **13 virus databases and information sharing platforms have been established** and web services have been established. Over the years, the center has provided domestic and foreign research institutions, colleges and universities with related virus resources services such as teaching and research materials, and has maintained close contact and cooperation and exchanges with relevant domestic and foreign institutions.

(Incidentally that page listed bat-coronaviruses as BSL-2 level - possibly for cell culture only, not clear).

A 2016 entry in a Chinese catalogue gives some details of the number and types of viruses held at the China Center for General Viruses Culture Collection (CCGVCC), part of the WIV.

See [http://www.wfcc.info/ccinfo/collection/by\\_id/613](http://www.wfcc.info/ccinfo/collection/by_id/613):

Acronym	CCGVCC	
Full Name	China Center for General Viruses Culture Collection	
Institution	Wuhan Institute of Virology, Chinese Academy of Sciences	
Number of Strains until now		
Type	Holding strains new species	(total number)/(number from your country)
Cell lines: animal	110	110
Viruses: animal	922	922
Viruses: plants	160	160
Viruses: Bacteria	84	0
Viruses: Insect	135	0
Date of Entry	1981-10-14	
Date of Reply	2016-11-04	

There is also a good example of mention of these databases in a [paper by Yuan Zhiming](#) ('Investigation of Viral Pathogen Profiles in Some Natural Hosts and Vectors in China', Virologica Sinica, Mar 2018).

## 2.b Funding:

Here is another mention of the portal with a [brief description](#)..



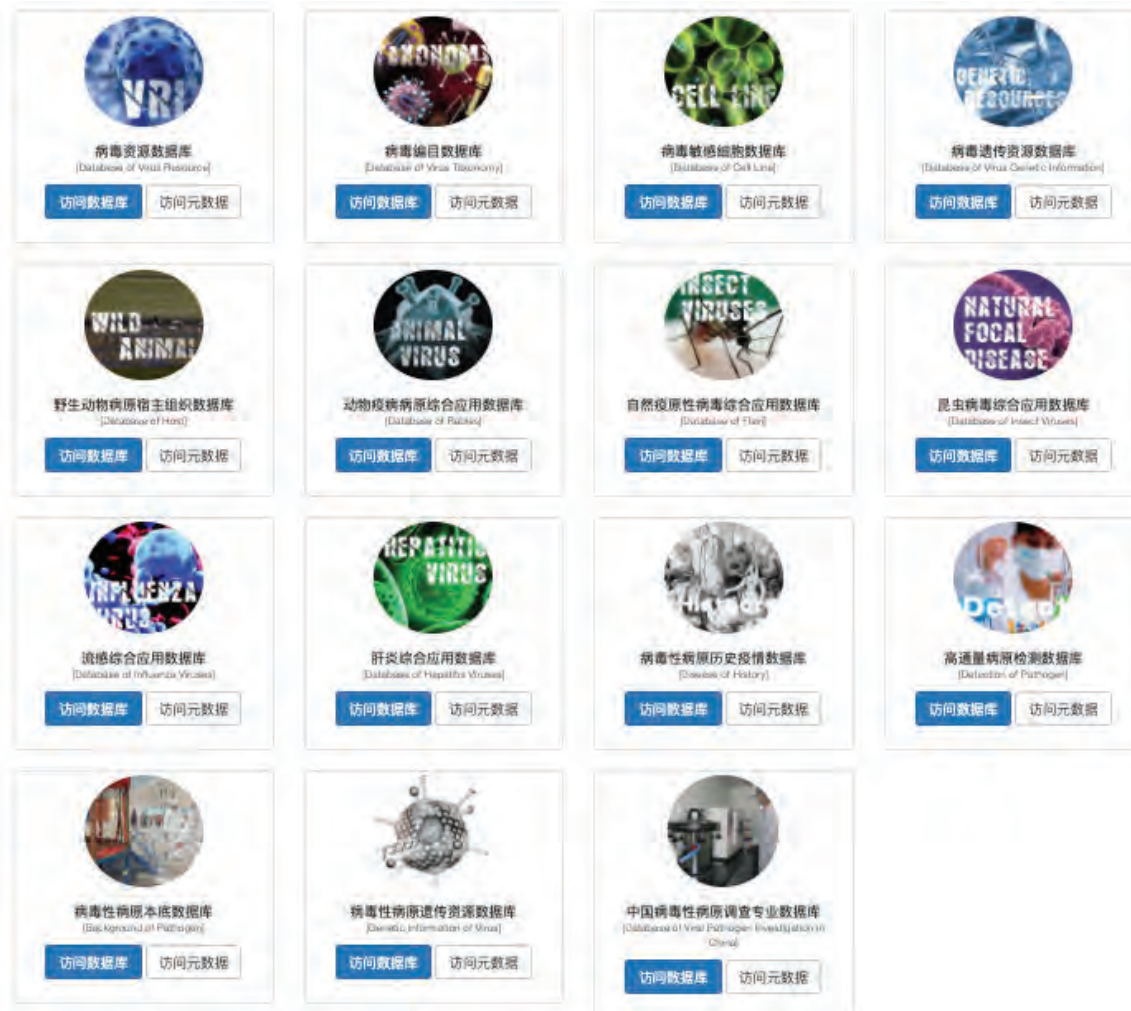
The reference to the 11<sup>th</sup> plan (2006-2010) likely refers to the inception of the project as the databases metadata pages ([example](#)) show that the first DBs were set up in 2011, so about a year after initial funding.

After its inception as part of the 11<sup>th</sup> Five-Year Informatization Construction Project, these DBs and the portal have been further funded via specific projects under the five-year plans that followed.

The latest of such projects is the 'Special Scientific Big Data Project of the Chinese Academy of Sciences' "[13<sup>th</sup> Five-Year Special Scientific Big Data Project](#)" ([translation](#)), part of the 13<sup>th</sup> Five Year Plan (2016-2020). That Special Scientific Big Data project was approved in [Feb 2016](#) and kicked off in late 2017 and called for work completion by the 31<sup>st</sup> Dec 2020. It was reviewed in [July 2019](#).

## 2.c Underlying DBs:

The portals at [www.virus.org.cn](http://www.virus.org.cn) and [www.viruses.nsd.cn](http://www.viruses.nsd.cn) gave access to 15 databases in all.



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### List of underlying DBs:

Databases under <a href="http://www.virus.org.cn">www.virus.org.cn</a> / <a href="http://www.viruses.nsd.cn">www.viruses.nsd.cn</a> portal (itself offline)					
#	name	description	URI /URL	Status	Issuing agency
1	Database of Virus Resource / 病毒资源数据库 <a href="#">metadata</a>	[A catalogue of virus databases] The virus resource database integrates databases with independent intellectual property rights, including virus preservation database, virus species database, type specimen database, virus species database, and establishes a large-scale "Chinese virus resource database". Its virus resources cover various virus databases, including Human medical virus database, animal virus database, zoonotic virus database, wild animal virus database, natural foci virus database, emerging infectious disease pathogen database, insect virus database, plant virus database, bacterial virus database, virus genetic resource database (Preserve important viral gene fragment cloning plasmid library, gene sequence library, important genetic material)	cn.csdb.viruses.w ww.vri <a href="http://www.viruses.nsd.cn/vri.jsp">http://www.viruses.nsd.cn/vri.jsp</a>	<b>offline</b>	Wuhan Institute of Virology, Chinese Academy of Sciences Contact name: Fan Zhaojun Chinese Academy of Sciences Wuhan Institute of Virology No. 44, Xiaohongshan Middle District, Wuchang, Wuhan Phone 027-87199112 EMAIL roy@wh.iov.cn
2	Database of Virus Taxonomy / 病毒编目数据库 <a href="#">metadata</a>	The virus taxonomy database mainly contains basic information of more than 7,800 strains of viruses, including the English name, Chinese name, classification, host, collection time, location, source, quantity, original literature, biological safety level and other data information of the virus, as well as the physical and chemical information of the virus. Characteristics, genome information, virus classification information, to maximize the background information of the species; the establishment of the database provides a convenient and friendly search interface, which can be based on the classification level of the virus, such as the Chinese and English names of the family name and the species name Or part of the fields to query virus information.	cn.csdb.viruses.w ww.bdbm <a href="http://www.viruses.nsd.cn/bdbm.jsp">http://www.viruses.nsd.cn/bdbm.jsp</a> .bdbm /	<b>offline</b>	
3	Database of Cell Line / 病毒敏感细胞数据库 <a href="#">metadata</a>	The 'virus-sensitive cell line' database mainly collects and preserves the corresponding virus-sensitive cell lines (lines) resources of humans and animals in China; researches and develops new cell culture technologies, and researches and develops new technologies for the preservation and quality control of cell lines (lines); facing the whole country , Provide standardized cell lines (lines) and related services for research in the field of virology and biotechnology in my country.	cn.csdb.viruses.w ww.cell <a href="http://www.viruses.nsd.cn/bdmgxb.js">http://www.viruses.nsd.cn/bdmgxb.js</a> p	<b>offline</b>	
4	Database of Virus Genetic Information /	The virus genetic resource database (genetic resources-clone library) collects basic information about the cloning of important functional genes of various pathogens, including the biological background of the cloned genes, gene	cn.csdb.viruses.w ww.nuc	<b>offline</b>	



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	病毒遗传资源数据库 <a href="#">metadata</a>	description, coding protein, function, references, etc.; and establishes and Reserve the nucleic acid detection methods for these pathogens.	<a href="http://www.viruses.nsd.cn/byczyklk.jsp">http://www.viruses.nsd.cn/byczyklk.jsp</a>		
5	Pathogenic Wild Animal Host Database / 野生动物病原宿主组织数据库	The collection of pathogenic wild animal host database includes different pathogen transmission vectors (rodents, birds, bats, mosquitoes, ticks), different sample types (throat swabs, anal swabs, serum, pathological tissues) storage temperature, storage methods, Scientific data such as physical status, sharing method, pathological background, etc	cn.csdb.viruses.www.host <a href="http://www.viruses.csdb.cn/ysdw.jsp">http://www.viruses.csdb.cn/ysdw.jsp</a>	<b>offline</b>	
6	Database of Animal Disease Pathogens / 动物疫病病原综合应用数据库	The comprehensive application database of animal disease pathogens integrates animal disease pathogen data and related virus strain information, and provides independent research epidemiological survey data, including: animal disease pathogen isolates information, biological characteristics, antigenic phenotype, pathogenicity, Genomics, genetic stability and molecular evolution characteristics, epidemiological analysis and geographic display systems, etc.; can intuitively realize the graphical display of geographic information of biological information systems such as molecular epidemiological data and epidemic dynamics; can integrate common analysis software, such as Multi-sequence comparison, sequence mutation analysis, evolution analysis, etc., to realize the safe storage and sharing of molecular data; it is also possible to conduct inference and analysis of the pathogen gene library based on the existing virus gene sequence and the evolution model based on the evolutionary model, thereby providing virology Related research provides a complete information service platform with convenient operation interface, safe data sharing, and retrieval content covering basic and professional databases.	cn.csdb.viruses.www.rabiesdb <a href="http://appdb.viruses.nsd.cn/rabiesdb">http://appdb.viruses.nsd.cn/rabiesdb</a>	<b>offline</b>	
7	Database of natural foci of viruses / 自然疫源性病毒综合应用数据库	The comprehensive application database of natural foci of viruses integrates natural foci virus data and related strain information, and provides independent research epidemiological survey data, including: natural foci virus isolate information, biological characteristics, antigen table Type, pathogenicity, genomics, genetic stability and molecular evolution characteristics, epidemiological analysis and geographic display system, etc.; can intuitively realize the graphical display of geographic information in biological information systems such as molecular epidemiological data and epidemic situation; Integrate common analysis software, such as multiple sequence comparison, sequence mutation analysis, evolution analysis, etc., to realize the safe storage and sharing of molecular data; it can also be carried out based on the evolutionary model based on the existing natural epidemic-borne virus gene sequence Pathogen gene bank inference and analysis; provide a convenient operation interface for virology related research, data sharing safety, and a	cn.csdb.viruses.www.flavdb <a href="http://appdb.viruses.nsd.cn/flavdb/">http://appdb.viruses.nsd.cn/flavdb/</a>	<b>offline</b>	

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		complete information service platform covering basic databases and professional databases			
8	Database of Insect Viruses / 昆虫病毒综合应用数据库	The insect virus comprehensive application database integrates insect virus data and related virus strain information, and provides independent research epidemiological survey data, including: natural foci virus isolate information, biological characteristics, antigenic phenotype, pathogenicity, Genomics, genetic stability and molecular evolution characteristics, epidemiological analysis and geographic display systems, etc.; can intuitively realize the graphical display of geographic information of biological information systems such as molecular epidemiological data and epidemic dynamics; can integrate common analysis software, such as Multi-sequence comparison, sequence mutation analysis, evolutionary analysis, etc., to realize the safe storage and sharing of molecular data; it can also perform pathogenic gene library inference and analysis based on the existing insect virus gene sequence based on the evolution model; for virology Related research provides a complete information service platform with convenient operation interface, safe data sharing, and retrieval content covering basic and professional databases	cn.csdb.viruses. www.bac <a href="http://appdb.virus.es.nsidc.cn/baculodb/">http://appdb.virus.es.nsidc.cn/baculodb/</a>	<b>offline</b>	
9	Database of Influenza Viruses / 流感综合应用数据库	The Influenza Comprehensive Application Database integrates influenza virus data and related strain information, and provides independent research epidemiological survey data, including: influenza virus isolate information, biological characteristics, antigenic phenotype, pathogenicity, genomics, genetics Stability and molecular evolution characteristics, epidemiological analysis and geographic display system, etc.; it can dynamically realize the graphical display of geographic information in the biological information system of influenza virus, including: pathogen, circulation information, time and space information, transmission route, infection mode , Susceptible host, range, etc.; it can integrate common analysis software, such as multiple sequence alignment, sequence mutation analysis, evolution analysis, etc., to realize the safe storage and sharing of molecular data; it can also be based on the existing influenza virus gene sequence. Based on the evolution model, the pathogen gene bank is inferred and analyzed; it provides a convenient operation interface for virology-related research, data sharing is safe, and a complete information service platform covering basic databases and professional databases; for influenza virus epidemic early warning and prevention	cn.csdb.viruses. www.aiv <a href="http://appdb.virus.es.nsidc.cn/infludb/">http://appdb.virus.es.nsidc.cn/infludb/</a>	<b>offline</b>	

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		Control provides a multi-level information exchange platform.			
10	Database of Hepatitis Viruses / 肝炎综合应用数据库	The Hepatitis Comprehensive Database integrates various hepatitis virus data and related strain information, and provides epidemiological survey data for independent research.	<a href="http://www.virus.s.nsidc.cn/hepatitis.jsp">http://www.virus.s.nsidc.cn/hepatitis.jsp</a>	<b>offline</b>	
11	Disease of History / 病毒性病原历史疫情数据库	Contains a series of historical epidemic data including the outbreak of key pathogens. The specific data should include the time of the outbreak, the end time, the spread of the epidemic, the number of infections, and the number of deaths (rate), and restore as much as possible the habitat data of the foci at the time of the outbreak. At the same time, the secondary data processing is carried out, and the historical epidemic database is established according to different regions, different hosts, different pathogens, and habitats.	<a href="http://www.virus.s.nsidc.cn/history.jsp">http://www.virus.s.nsidc.cn/history.jsp</a>	<b>offline</b>	
12	Detection of Pathogen / 高通量病原检测数据库	Through bioinformatics analysis, establish the experimental technology of Pan-PCR and multiple primer combined PCR for viruses carried by different species (bats, birds, mice, ticks, and mosquitoes); and establish a laboratory for bats, birds, mice, ticks, and mosquitoes. Nucleic acid detection methods on a flow-based liquid chip that carry important viruses; develop new rapid detection methods for nucleic acids, antigens, and antibodies that carry viruses in natural hosts and vector insects; use the above methods to perform high-throughput virus detection on samples collected in different regions. Contains the result data of metagenomic sequencing and analysis of related samples to construct a high-throughput pathogen detection database.	<a href="http://www.virus.s.nsidc.cn/detect.jsp">http://www.virus.s.nsidc.cn/detect.jsp</a>	<b>offline</b>	
13	Background of Pathogen / 病毒性病原本底数据库	Enter the detection and analysis data of the collected samples carrying viral pathogens to form the investigation report of different species carrying viral pathogens in the representative natural focus areas (Xinjiang, Qinghai, <b>Hubei</b> , <b>Yunnan</b> ), and obtain the typical natural focus of viral diseases in my country. The new virus background of China, the construction of the original database of Chinese viral diseases, provides important data for major basic research such as understanding the interaction between host animals, vector insects, and viruses, and revealing the outbreak mechanism of new and emerging infectious diseases.	<a href="http://www.virus.s.nsidc.cn/pathogen.jsp">http://www.virus.s.nsidc.cn/pathogen.jsp</a>	<b>offline</b>	

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14	Genetic Information of Virus / 病毒性病原遗传资源数据库	Contains the isolation and identification data of viral pathogens in different animal species and the information of new pathogen isolates, and establish a database of viral genetic resources from bats, mosquitoes, ticks, rodents, and birds in my country, providing indispensability for major scientific research such as vaccines and drugs Indispensable source resources.	<a href="http://www.virus.s.nsidc.cn/pathogen.jsp">http://www.virus.s.nsidc.cn/pathogen.jsp</a>	<b>offline</b>	
15	Database of Viral Pathogen Investigation in China / 中国病毒性病原调查专业数据库	This project integrates the original database on the basis of China's virus resource basic database. Aiming at the "Investigation of Viral Pathogens of my country's Important Natural Hosts and Vector Insects", the stored pathogen survey will collect new virus background data and genetic resources, which is a new Provide data for major basic research such as the outbreak mechanism of sudden infectious diseases, and will also provide indispensable source data resources and standards for major scientific research such as early diagnosis of emerging infectious diseases, vaccines and drugs.	<a href="http://www.virus.s.nsidc.cn/chinavpi">http://www.virus.s.nsidc.cn/chinavpi</a>	<b>offline</b>	

## 2.d Zoom: Access Interruption:

The portals and all the databases are inaccessible. The machine is there but not serving any web-page at any of the relevant addresses.

```
PING www.virus.org.cn (39.99.133.234): 56 data bytes
64 bytes from 39.99.133.234: icmp_seq=0 ttl=36 time=330.017 ms
64 bytes from 39.99.133.234: icmp_seq=1 ttl=36 time=328.971 ms
64 bytes from 39.99.133.234: icmp_seq=2 ttl=36 time=329.622 ms
64 bytes from 39.99.133.234: icmp_seq=3 ttl=36 time=329.284 ms
64 bytes from 39.99.133.234: icmp_seq=4 ttl=36 time=327.740 ms
```



# Exhibit 19

Article

# Analysis of the Hosts and Transmission Paths of SARS-CoV-2 in the COVID-19 Outbreak

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**Abstract:** The severe respiratory disease COVID-19 was initially reported in Wuhan, China, in December 2019, and spread into many provinces from Wuhan. The corresponding pathogen was soon identified as a novel coronavirus named SARS-CoV-2 (formerly, 2019-nCoV). As of 2 May, 2020, over 3 million COVID-19 cases had been confirmed, and 235,290 deaths had been reported globally, and the numbers are still increasing. It is important to understand the phylogenetic relationship between SARS-CoV-2 and known coronaviruses, and to identify its hosts for preventing the next round of emergency outbreak. In this study, we employ an effective alignment-free approach, the Natural Vector method, to analyze the phylogeny and classify the coronaviruses based on genomic and protein data. Our results show that SARS-CoV-2 is closely related to, but distinct from the SARS-CoV branch. By analyzing the genetic distances from the SARS-CoV-2 strain to the coronaviruses residing in animal hosts, we establish that the most possible transmission path originates from bats to pangolins to humans.

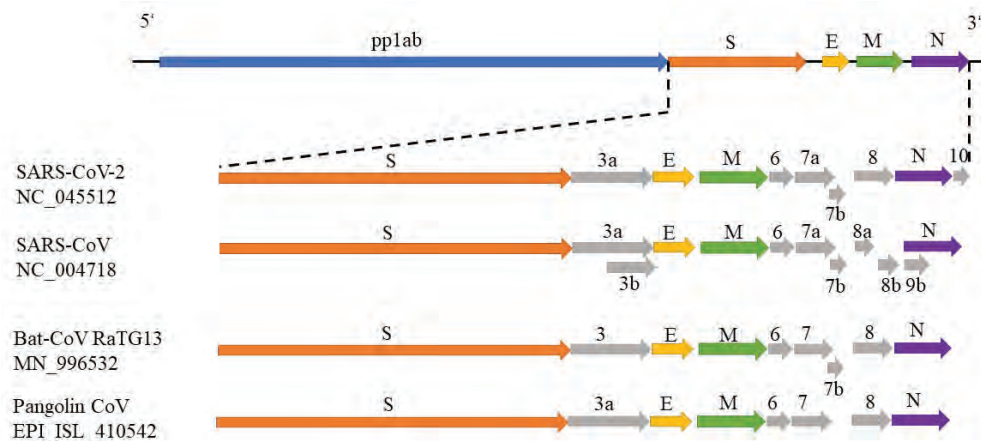
**Keywords:** SARS-CoV-2; COVID-19; transmission path; Natural Vector method

## 1. Introduction

Coronaviruses (CoVs) are members of the subfamily *Coronavirinae* in the family *Coronaviridae* and the order *Nidovirales*. They can cause respiratory and intestinal infections in animals and humans [1], and are considered to be highly pathogenic to humans since the outbreak of SARS (severe acute respiratory syndrome) in Guangzhou, China in 2003 [2]. Another highly pathogenic coronavirus, Middle East respiratory syndrome coronavirus (MERS-CoV), emerged ten years after SARS and caused hundreds of fatalities. Four other types of coronaviruses which can infect humans but only cause mild symptoms are HCoV-229E, HCoV-HKU1, HCoV-NL63, and HCoV-OC43 [1]. Coronaviruses are divided into alpha-coronaviruses and beta-coronaviruses which may infect mammals, gamma-coronaviruses, and delta-coronaviruses which primarily infect birds. Among the six human coronaviruses, HCoV-229E and HCoV-NL63 are alpha-coronaviruses, while the other four HCoVs are beta-coronaviruses. The viruses were initially sorted into these genera based on serology but are now taxonomically classified by genomic phylogeny [2,3].

In December 2019, a severe respiratory disease was reported in Wuhan, China, and spread in many provinces radiating outwards. Now it has become a global pandemic, which has already caused over 3 million confirmed cases and 235,290 deaths in the globe. Chinese health authorities were the first to report the complete genome of SARS-CoV-2 in GenBank (NC\_045512) and annotated 11 open reading frames (ORFs) [4]. The genomic structure of coronavirus SARS-CoV-2 is shown in Figure 1, which is

similar to other beta-coronaviruses. The 5'-terminal two-thirds of the genome encodes replicase polyprotein 1ab (pp1ab) with a length of 21,290 nt and contains 16 predicted non-structural proteins. The 3' terminus encodes four structural proteins and other non-structural proteins, including spike glycoprotein (S), ORF3a, envelope small membrane protein (E), membrane protein (M), ORF6, ORF7a, ORF7b, ORF8, nucleocapsid protein (N) and ORF10 in order. Especially, the spike S protein with the Receptor-Binding domain (RBD) is the primary determinant of viral tropism and is responsible for host receptor binding and membrane fusion [5,6]. During the SARS-CoV infection, S protein first binds to the cellular receptor angiotensin-converting enzyme 2 (ACE2), and the ACE2-virus complex is then translocated to endosomes, where the S protein is cleaved by the endosomal acid proteases (cathepsin L) to activate its fusion activity [7]. Therefore, SARS-CoV-2 S protein may be the target of new SARS-CoV-2 vaccines [7].



**Figure 1.** The genomic structures of SARS-CoV-2, SARS-CoV, bat-CoV and pangolin-CoV. The genomic structures of SARS-CoV-2 (NC\_045512), SARS-CoV (NC\_004718) and bat-CoV (MN\_996532) were drawn according to their annotations in NCBI GenBank. The genomic structure of pangolin-CoV was drawn in [8].

Considering the epidemic nature SARS-CoV-2 in the COVID-19 outbreak, identifying the intermediate and original host of SARS-CoV-2 is crucial for preventing new large-scale infection and transmission of viruses. Coronaviruses can spread with direct or intermediate hosts such as avians, bats, bovines, camels, canines, civets, felines, murines, and porcines [2]. Pangolins are recently identified as possible hosts for coronaviruses [8]. It is well acknowledged that controlling first-generation infection cases has more significant effects than later person-to-person transmission stage. A series of policies such as locking down Wuhan had been established by the Chinese government with significant effects. It is therefore of great importance to identify the correct host and to cut off the transmission from animals to humans as soon as possible. Bats were suggested as the natural reservoir hosts for SARS-CoV and most coronaviruses [9–11], and subsequently, the discovery of SARS-related coronaviruses globally supports the connection between bats and coronaviruses. Among the intermediate hosts, masked palm civets were first considered as the host of SARS-CoV [12], while later research revealed that the coronavirus strains found in civets were transmitted from other animals [13]. On the other hand, dromedary camels were considered highly related in the case of MERS-CoV [14].

Genomic phylogenetics provides insights on the evolution and classification of viruses, and is especially important for tracking the origin of SARS-CoV-2 [15–17]. Based on alignment approaches, current research only associated the SARS-CoV-2 strains with SARS-CoVs. Therefore, in this study, we first apply an alignment-free approach named Natural Vector to compare 791 complete genomes of human coronaviruses and 95 SARS-CoV-2 strains collected since the outbreak in Wuhan to construct phylogenetic analysis. The analysis of protein sequences and structures of the viruses infers the

relationship among coronaviruses as well. The mutations in genomes can be an indicator of the further change in protein sequences, while proteins serve as the functional units to proceed infection on animals or humans. Thus using both genome and protein information in the study could validate each other and provide us with a comprehensive understanding of the SARS-CoV-2 strains. On the one hand, the genomes include all the necessary information that a species/virus inherits and selecting a partial region would lead to a loss of information. On the other hand, proteins perform a variety of functions in almost the whole process of infection. Therefore, in our work, the phylogenetic study was based on the genomes data, and the identification of host relies on both the results from genomes and proteins.

Further, our main study is to infer the intermediate host of SARS-CoV-2 based on the coronaviruses found in various animal hosts. By calculating the distance between SARS-CoV-2 and coronavirus genomes found in animals, we may elucidate the infection chain among animal hosts and finally to humans. Notably, we also utilized the spike proteins data in the coronaviruses of various hosts.

Theoretically, it has been proved that the natural vector gives a true distance among DNA or protein sequences. Other similar researches have also utilized the spike protein sequence to identify the host of SARS-CoV-2, previous studies suggested snakes being hosts depending on condo usages [18]. However, in a later work [19], this conclusion was refuted by showing that codon usage does not determine the hosts. Our work here considers each host source as a group and applies the Hausdorff distance in mathematics to compare the coronaviruses from different hosts. The transmission path we found here was another proof of pangolins as intermediate hosts firstly proposed by [8].

## 2. Materials And Methods

### 2.1. Dataset

The phylogeny study of coronavirus was based on the comparison between SARS-CoV-2 strains and known human coronaviruses. The SARS-CoV-2 strains were downloaded from GISAID (<https://platform.gisaid.org/epi3/frontend>) on 23 February, 2020, which were collected from patients at the early stage of the outbreak in Wuhan, China. 731 known human coronavirus complete genomes were downloaded from NCBI directly, which consist of 29 HCoV-229E strains, 52 HCoV-NL63 strains, 34 HCoV-HKU1 strains, 153 HCoV-OC43 strains, 214 SARS-CoVs and 249 MERS-CoVs. The genomes from non-human hosts were filtered and excluded. All sequences used in this research consisted of only four nucleotides, A, C, G, T, without ambiguous 'N' resulted from low sequencing accuracy. We also selected 38 coronavirus genomes from recent and previous research to construct another phylogenetic tree, with the Accession Numbers listed in the tree as well.

The host identification was also based on these 95 complete SARS-CoV-2 records from GISAID. In addition, we downloaded the animal coronaviruses from NCBI GenBank. Our analysis covered the ten common animal hosts: avian, bat, bovine, camel, canine, civet, feline, porcine, and pangolin. The coronaviruses in three hosts (bat, camel, and murine) can be either alpha or beta types. Though coronaviruses found in canines were also claimed to contain both alpha and beta types, we didn't find the reliable beta coronaviruses genomes from canines on NCBI GenBank. Therefore, we considered the CoVs in three hosts (bat, camel and murine) as different groups, giving 13 host sources as shown in the following sections. Two samples from pangolin were sequenced in Guangxi province, China in 2017, while the third was sequenced in Guangdong province in 2019. These pangolin samples were smuggled into southern China according to a source [8]. Pangolin is a popular wild animal in the Chinese market. The COVID-19 outbreak in Wuhan this time was firstly located at a so-called seafood market, but actually it was a live animal market because a variety of animals were for sale in this seafood market for a long time. We collected 823 coronaviruses with other animal hosts on NCBI and 3 pangolin-CoVs from GISAID and compared these 826 records with the 95 SARS-CoV-2 strains.

For the research based on protein data, the corresponding spike protein sequences of these 826 host-CoVs and 95 SARS-CoV-2 strains were downloaded from NCBI. Polyproteins of a coronavirus were processed by viral proteinases to yield mature proteins. Among them, 3CL proteinase performs at least eleven proteolytic cleavages within the polyprotein 1ab (pp1ab), which was considered to be the drug target [20]. The spike protein, which is critical for SARS-CoV-2 infection and differs CoV types, is responsible for ACE2 receptor binding and membrane fusion. The spike protein sequence of BetaCoV/pangolin/Guangxi/P2V/2017 was obtained in [8]. Five protein structures of human coronavirus 3CL proteinase and five structures of spike protein were downloaded from RCSB (<https://www.rcsb.org/>). All the accession numbers of the datasets are shown in Supplementary files S1, S2 and S3.

## 2.2. Natural Vector

Many alignment-free methods have been proposed in recent years, such as Feature Frequency Profiles (FFP) [21], Fourier-based method [22–24]. One important alignment-free method, named Natural Vector (NV) [25], describes a nucleotide sequence by a 12-dimensional numerical vector based on the distribution of nucleotides. The Natural Vector method has been successfully applied in the molecular evolution of bacteria and viruses [26–28]. Given an arbitrary DNA/RNA sequence, its natural vector can be calculated instantaneously with little computational cost, and the correspondence between the natural vector and the sequence is one-to-one. This indicates that the key information hidden in the sequence can be extracted by the Natural Vector method. Here the “key information” refers to the information that can reflect the real evolutionary pattern and therefore the corresponding distances can represent the true phylogenetic relationship. So we apply the Natural Vector approach to study the genetic relationships of coronaviruses on both genome data and protein data for a comprehensive understanding of SARS-CoV-2 strains.

Let  $S = (s_1, s_2, \dots, s_n)$  be a DNA sequence of length  $n$ , where  $s_i \in \{A, C, G, T\}$ . Let  $s[k][i]$  be the location of the  $i$ -th occurrence of nucleotide  $k$ . The distribution of a specific nucleotide  $k$  within a DNA sequence can be described by three quantities:

$n_k$ : the number of occurrences of nucleotide  $k$  within the sequence.

$\mu_k$ : the mean distance of nucleotide  $k$  from the first position.

$$\mu_k = \frac{\sum_{i=1}^{n_k} s[k][i]}{n_k}$$

$D_2^k$ : the second normalized central moment of the distribution of nucleotide  $k$ .

$$D_2^k = \frac{\sum_{i=1}^{n_k} (s[k][i] - \mu_k)^2}{n \times n_k}$$

Therefore, the 12-dim natural vector (NV) of DNA sequence can be defined as:  $(n_A, n_C, n_G, n_T, \mu_A, \mu_C, \mu_G, \mu_T, D_2^A, D_2^C, D_2^G, D_2^T)$ . By replacing four types of nucleotides to 20 amino acids:  $s_i \in \{A, R, N, D, C, E, Q, G, H, I, L, K, M, F, P, S, T, W, Y, V\}$ , Natural vector can be also applied to protein sequences. Then each DNA or protein sequence is converted to a numerical unit. Thus, using the NV representation, we can efficiently perform mathematical analysis on DNA sequences and further infer the relationship of the sequences through the corresponding natural vectors.

## 2.3. Euclidean Distance and Hausdorff Distance

The biological distance between two sequences can be expressed as the Euclidean distance between the two corresponding natural vectors in 12-dim space, as applied on many datasets [25]. Therefore, for a dataset of  $n$  sequences, the relationship is here described as a  $n \times n$  pairwise distance matrix. The pairwise distance matrix is a symmetric distance with all positive non-diagonal elements, where element  $(i, j)$  represents the distance from  $i$ th sequence to the  $j$ th. Diagonal elements are all zero because diagonal  $(i, i)$  represents the distance from  $i$  to itself. By defining the distance between two



vectors, we gave a reliable measurement of the similarity/dissimilarity between two DNA sequences based on the correspondence between a DNA sequence and its NV.

In the host identification, the distance between the coronaviruses from two hosts was measured by mathematical techniques as well. Here we first applied Hausdorff distance to calculate the distance between two groups of coronaviruses with different hosts [29]. In mathematics, the Hausdorff distance, named after Felix Hausdorff [30], measures how far two subsets of a metric space are from each other. It turns the set of all non-empty compact subsets of a metric space to form a metric space in its right. Let  $X$  and  $Y$  be two non-empty subsets and the Hausdorff distance  $d(X, Y)$  is defined as follows:

$$d(X, Y) = \max\{\sup_{x \in X} \inf_{y \in Y} d(x, y), \sup_{y \in Y} \inf_{x \in X} d(x, y)\}$$

The MATLAB code of calculating Hausdorff distance can be downloaded from Mathworks (<https://www.mathworks.com/matlabcentral/fileexchange/26738-hausdorff-distance>). Hausdorff distance satisfies the three requirements of a real distance from the mathematical perspective:

- The distance between two sets is always non-negative. The distance is zero if and only if the two sets are exactly the same.
- The direction doesn't change the distance value, i.e.,  $d(X, Y) = d(Y, X)$ .
- The distance satisfies the triangular inequality, i.e.,  $d(X, Y) \leq d(X, Z) + d(Z, Y)$ , for any  $X, Y$ , and  $Z$ .

Another way to measure the distance between two sets is proposed here named Center distance based on convex hulls. After the transformation from sequences to vectors in Euclidean space. Let  $A = \{NV_1, NV_2, \dots, NV_n\}$  represent a point set of NVs of  $n$  protein sequences. Then the convex hull of  $A$  is defined as

$$C(A) = \{p | p = \sum_{i=1}^n \alpha_i NV_i, \sum_{i=1}^n \alpha_i = 1, \alpha_i \geq 0, 1 \leq i \leq n\}$$

Based on the definition above, we can know that a convex hull is the smallest convex set containing the given point set. For two sets of vectors, each set can be depicted by its convex hull, and the barycenter of each hull is considered as the representative of the hull. Therefore, the Euclidean distance between the two barycenters represents the average distance between two sets as well.

It is crucial to define a correct distance when studying the similarity between two groups of sequences. We showed above that Hausdorff distance is a mathematical distance, which can reflect the biological distance among the sequences with different hosts.

#### 2.4. Phylogenetic Study

After obtaining the pairwise distance matrix between sequences, phylogenetic analysis was constructed firstly by constructing the evolutionary tree. FastME is a distance-based phylogeny reconstruction program that works on distance matrices [31]. FastME provides distance algorithms to infer phylogeny based on balanced minimum evolution, which is the very principle of Neighbor-Joining (NJ) algorithm. It improves over NJ by performing topological moves using fast, sophisticated algorithms [32–34]. We applied BioNJ, an improved version of NJ based on a simple model of sequence data [35], to construct the tree and then adjusted the tree using FigTree software (<https://beast.community/figtree>). The phylogenetic study visualized the distance matrix results by clustering the similar units together in the evolutionary tree.

#### 2.5. Natural Graph

We drew the natural graph of SARS-CoV-2 strains and coronaviruses groups with different animal hosts as well. Natural graph was first proposed in 2015 [27]. For a dataset of  $n$  units, we first find the neighbor of each unit by searching for the smallest distance from each unit to any other units.

During this step, we usually draw a blue arrow connecting each unit with its neighbor. This gives the result of the first-level natural graph, which also shows the closest relationships among all units. Several groups will be formed after this step, and then we find the neighbor of each group by the smallest distance between groups. The distance between group A and group B is defined as the smallest distance among all distances from any unit in group A to any unit in group B. Therefore, by finding the closest neighbor of all units in several layers (in most cases, two layers are enough), natural graph successfully classifies units into several groups in the first layer and also reveals the relationships between groups in further steps. Combining the results from phylogenetic study, one can easily understand the relationship among units and also among groups of units.

All calculation in this project was performed using MATLAB R2018b on a computer with Intel(R) Core (RM) u7-5500U CPU @2.40GHz.

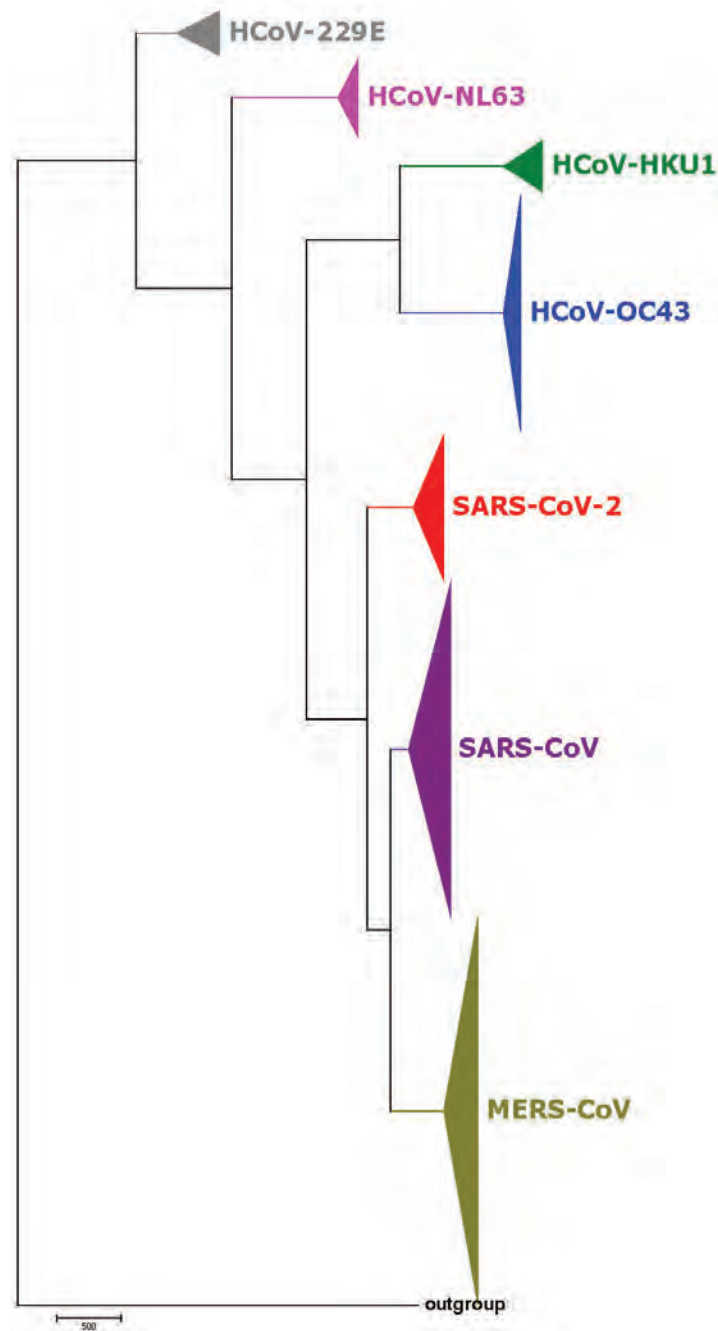
### 3. Results

#### 3.1. Phylogenetic Study of SARS-CoV-2

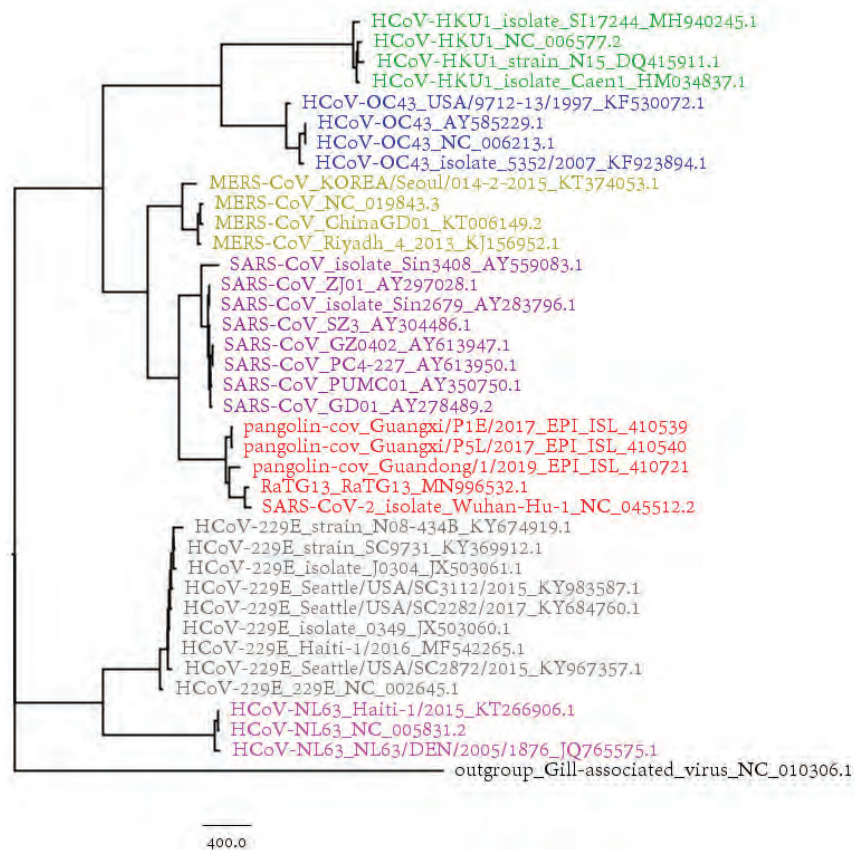
The phylogenetic tree based on the SARS-CoV-2 strains and 731 complete genomes of human coronaviruses (HCoVs) is shown in Figure 2, in which different colors represent different virus types. We also selected 38 coronavirus genomes of interest to construct the phylogenetic tree in Figure 3. Both the results in Figures 2 and 3 show that the SARS-CoV and MERS-CoV are under the same branch, as the sister clade of this new SARS-CoV-2. The phylogeny indicates the close relationship between SARS-CoV and SARS-CoV-2. The branch of HCoV-HKU1, HCoV-OC43, SARS-CoV-2, SARS-CoV and MERS-CoV is for beta-coronavirus, while HCoV-229E and HCoV-NL63 are both alpha-coronaviruses.

Protein analysis was also applied to these human coronaviruses. We downloaded five crystal structures of 3CL proteinase and five crystal structures of spike protein from PDB bank. Then pairwise root-mean-square deviation (RMSD) of the structures and pairwise NV-distances of the corresponding protein sequences were calculated. The results are shown in Table 1. All the RMSD and NV-distance of 3CL proteinase and spike protein between SARS-CoV-2 and SARS-CoV are the smallest, which concurs with the classification by the complete genomes. Although current SARS-CoV-2 is in a distinct clade to SARS-CoV, previous drug study on SARS-CoV may have helpful implications for antiviral research.

The detailed phylogenetic tree of 95 records of SARS-CoV-2 strains is shown in Figure 4. Most of the confirmed cases had been identified in Hubei province, China, and still most of the confirmed cases had been to Hubei or related to someone in Hubei. Guangdong province, China, on the other hand, was the location of the outbreak of SARS in 2003, and the fact that both provinces have a booming market for wild animals might contribute to the outbreak. During this outbreak starting from December 2019, Guangdong also has a high number of confirmed cases at the early stage of the pandemic, though it is not geographically close to Hubei. Hence, we labeled the units in several colors in Figure 4 based on the country of each patient. From the results in Figure 4, some SARS-CoV-2 strains from the same city or province are clustered together, which indicates that the spread of SARS-CoV-2 was rapid compared to its variation speed. Therefore, the current branches are mainly formed based on the movement of populations, rather than the genome mutations. This should be emphasized in the further determination of the geographical origin of SARS-CoV-2. These 95 records were all collected at a relatively early stage, and data from afterward patients would reflect the spread of SARS-CoV-2 rather than the origin of SARS-CoV-2 strains.



**Figure 2.** The phylogenetic tree of 95 SARS-CoV-2 and 731 known coronaviruses based on BioNJ and Natural Vector algorithm. Different colors represent different types of coronaviruses that can infect humans.

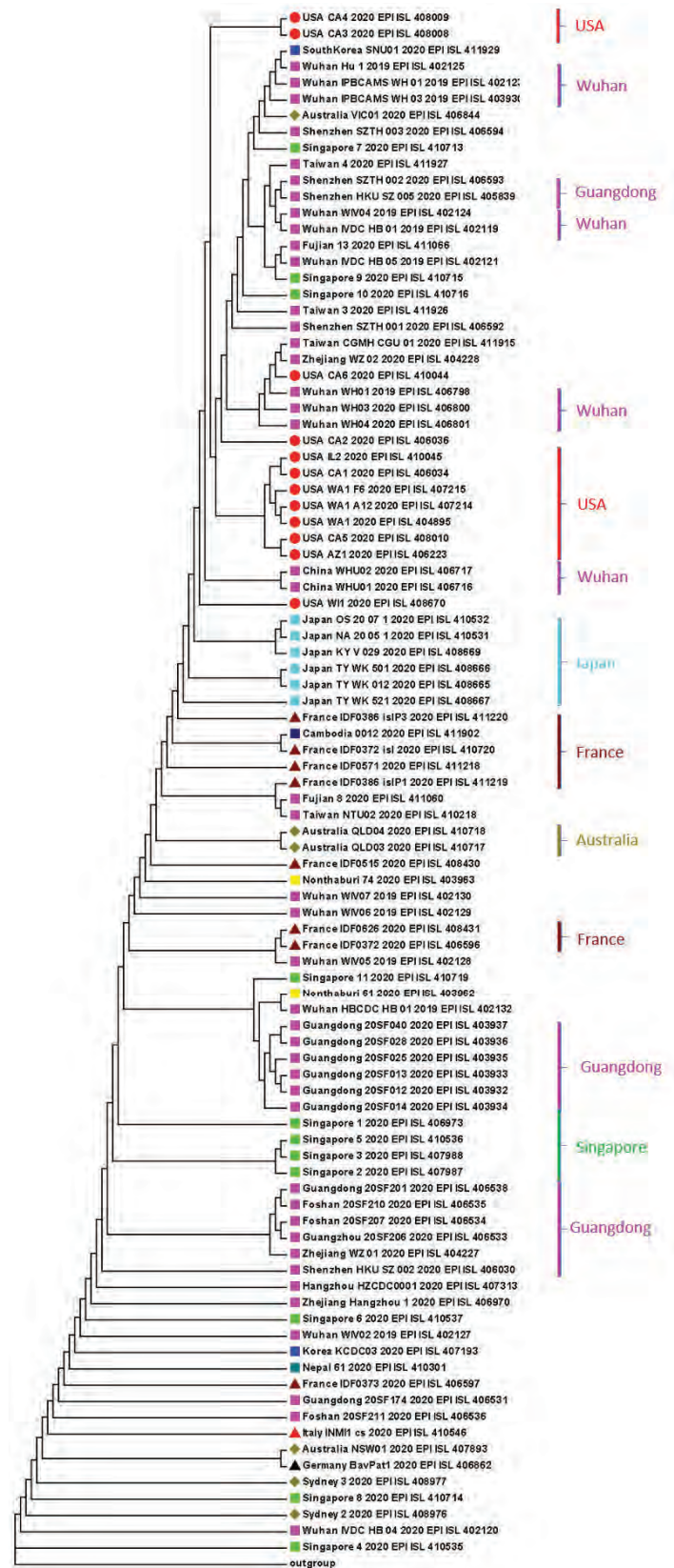


**Figure 3.** The phylogenetic tree of 38 coronavirus genomes based on BioNJ and Natural Vector algorithm.

**Table 1.** The RMSD and NV distance between 3CL proteinase (6LU7) / spike protein (6VXX) of SARS-CoV-2 and the counterpart proteins of other human coronaviruses.

3CL Proteinase	SARS-CoV-2	SARS-CoV	HCoV-229E	MERS-CoV	HCoV-NL63
PDB-Number	6LU7	3AW0	2ZU2	5WKJ	6FV2
RMSD		0.72	1.10	1.53	1.25
NV-Distance		22.61	117.82	140.59	118.98
Spike Protein	SARS-CoV-2	SARS-CoV	HCoV-229E	MERS-CoV	HCoV-NL63
PDB-Number	6VXX	5X58	6U7H	5X5F	5SZS
RMSD		1.74	2.21	3.20	2.71
NV-Distance		235.39	349.86	289.54	401.99

Variants within the same country tend to be clustered together in Figure 4, such as all samples from Japan. This can be explained by the limited number of movement of populations between the corresponding country and China, especially Wuhan, because of the long distance and also further policies of travel restrictions. However, within China, mainly because of the tradition of returning home at the Chinese Spring Festival in the first few days when the outbreak happened, transportation was even more often than common days. Patients from the same province might be genetically distant from each other if they have different sources of infection. Patients possibly became infected during their stay in Wuhan, but showed no obvious symptoms during the incubation, and after returning to home city/province, had fever or dry cough that further confirmed to be COVID-19. In this assumption, the distance will mostly rely on their infection source in Wuhan, rather than the distance between their current locations where they were confirmed.



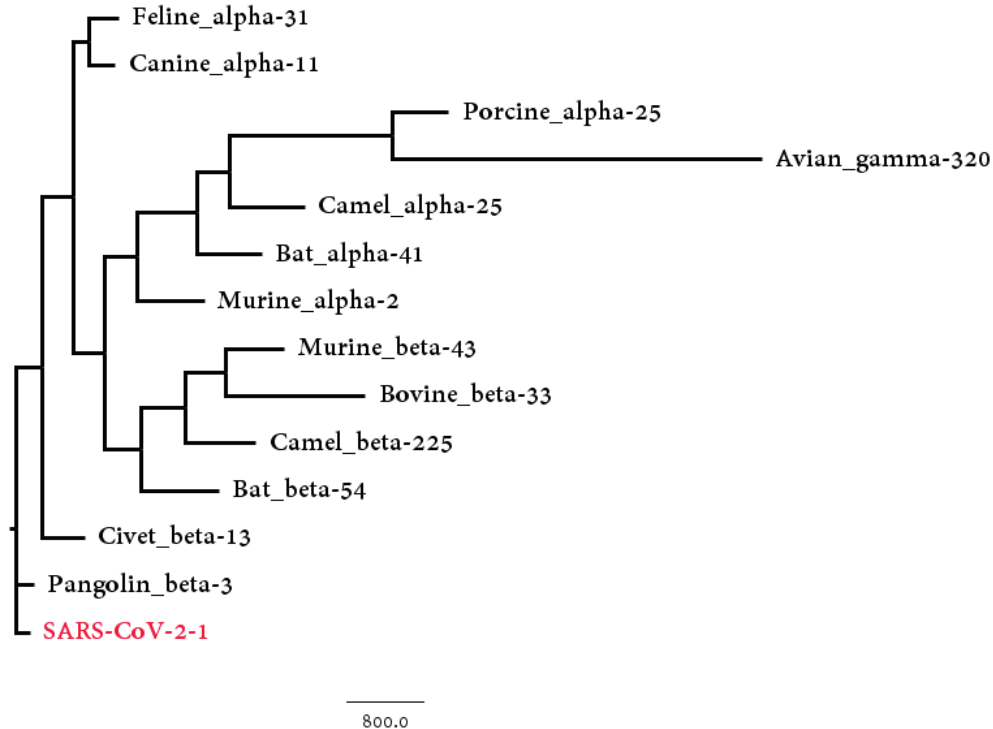
**Figure 4.** The phylogenetic tree of 95 SARS-CoV-2 strains where different colors represent the SARS-CoV-2 strains sampled from different countries.



### 3.2. Host Identification of SARS-CoV-2

Our main work is to identify the animal hosts of SARS-CoV-2. The host identification is of essential importance to the control of virus spread and to prevent another round of emergence outbreak. The correct identification of host, source or intermediate, could lead to the effective policy to isolate humans and hosts, therefore eliminating the risk of human exposure to new viruses and limiting further transmission. During the SARS epidemic in 2003, many patients were found to have had animal exposure, especially during the early stage of the outbreak. SARS-CoV and anti-SARS-CoV antibodies were found in masked palm civets and the animal handlers in a market place, but civets are not commonly considered as the origin of SARS-CoV. Several independent groups have shown that bats are the most likely natural hosts for SARS-CoV, or found more SARSr-CoVs in bats from China, European, African and Southeast Asian countries [13,36,36–48]. Other animal origins of human coronaviruses include avian, bovine, camel, canine, feline, murine, porcine and pangolin [2].

We collected the coronaviruses found in these animal hosts and compared them with SARS-CoV-2 strains to detect the similarity between the genome sequences. Bats, camels and murines contain both alpha and beta coronaviruses, thus they were considered as two different host groups. All together, there were 13 groups of coronaviruses found in animal hosts, and each group was then compared to the SARS-CoV-2 group, which included 95 SARS-CoV-2 strains. The corresponding phylogenetic tree based on Hausdorff distance is shown in Figure 5. Both the Hausdorff distance and Center distance between SARS-CoV-2 strains and host-CoV groups are shown in Table 2. Both results show that the beta coronaviruses found in pangolins and civets are closely related to the SARS-CoV-2 group based on the genome divergences. Though both civets and camels were considered to be intermediate hosts for other coronaviruses, the coronaviruses found in them are more distinct than the pangolin-CoVs group in Table 2.



**Figure 5.** The phylogenetic BioNJ tree based on the Hausdorff distance between SARS-CoV-2 strains group and 13 possible host groups.

Based on the genome data, only the coronaviruses found in four animal hosts (pangolin, civet, canine, and feline) show closer relationship to SARS-CoV-2 than bat does. The coronaviruses found in pangolins and civets are beta-coronaviruses, while the other two are alpha-coronaviruses. Thus, these four animals are possible intermediate hosts of SARS-CoV-2 but the analysis of the S protein can lead to more accurate results.

**Table 2.** Distance from SARS-CoV-2 group to the coronavirus group of each host.

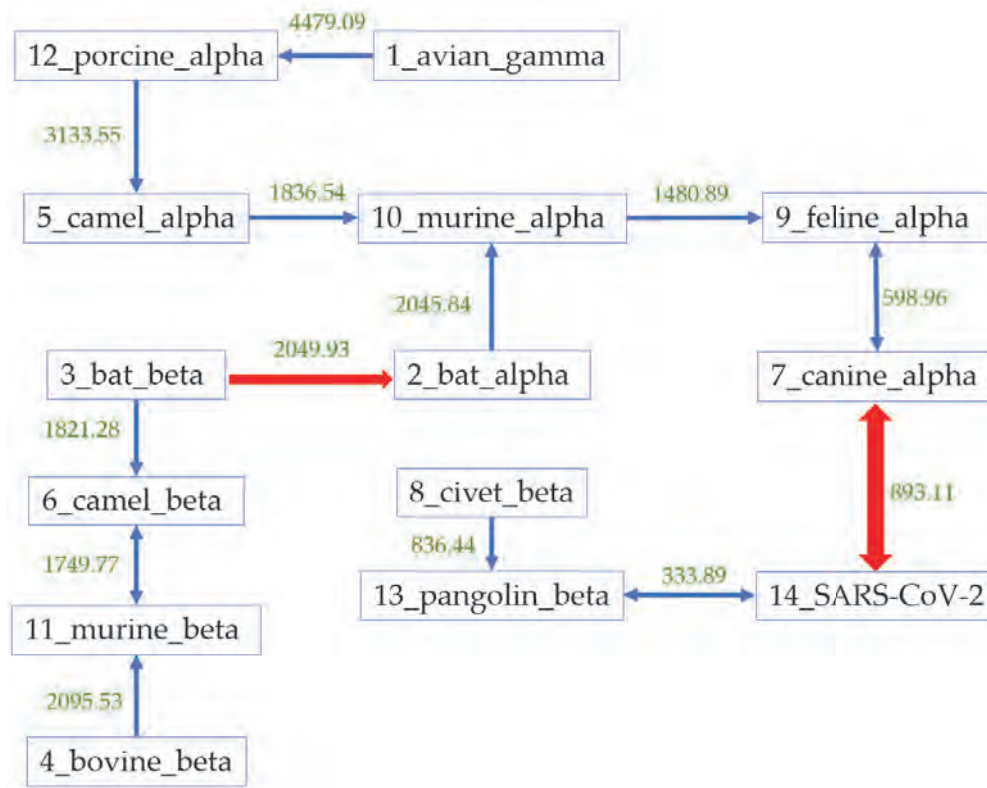
Host	Number	Hausdorff Distance <sup>1</sup>	Center Distance <sup>2</sup>	S-Protein Center Distance <sup>3</sup>
Pangolin_beta	3	333.89	230.11	117.39
Civet_beta	13	928.40	952.39	220.21
Bat_beta	54	2400.72	1102.03	205.47
Murine_beta	43	2620.43	2358.63	254.27
Camel_beta	225	2464.57	1307.54	353.01
Bovine_beta	33	2571.48	2377.34	317.78
Avian_gamma	320	8788.62	2753.43	426.91
Bat_alpha	41	3340.69	2494.54	257.71
Camel_alpha	25	3065.11	3044.61	405.31
Canine_alpha	11	893.11	947.82	485.56
Feline_alpha	31	1205.55	107.93	453.74
Murine_alpha	2	2168.66	2125.31	482.57
Porcine_alpha	25	4981.11	2784.12	391.29

<sup>1</sup> Hausdorff distance from SARS-CoV-2 strains to the coronaviruses found in each host group. <sup>2</sup> Center distance from SARS-CoV-2 strains to the coronaviruses found in each host group. <sup>3</sup> Center distance from the S protein sequences of SARS-CoV-2 strains to the S protein sequences of coronaviruses found in each host group.

Then we analyzed the spike proteins of SARS-CoV-2 and known coronaviruses found in these animal hosts. Receptor-Binding domain (RBD) is located on the S protein and thus S protein is essential for infectivity. The protein id of spike protein of SARS-CoV-2 is YP\_009724390.1. The Center distances between the spike protein of SARS-CoV-2 and the spike protein group of the coronaviruses of each host are shown in Table 2, which clearly indicates the significant similarity between SARS-CoV-2 and pangolin-CoV as well. This result coincides with the genome analysis.

The results agreed with each other and we further constructed the Natural Graph in Figure 6 using the Hausdorff distance based on the coronaviruses genomes. The blue arrows represent the first-level arrow. After the first-level grouping, all alpha-coronaviruses are clustered together, and the beta coronaviruses form two clusters. The green values are the corresponding Hausdorff distance between the two groups. The arrow from virus A to B means that among all viruses here, B has the smallest distance from A. The red thick arrows represent the second-level arrow, presenting the relationship among clusters that were forms from the first-level natural graph. In this case, all units are connected together after two levels. The natural graph shows that the most likely host is pangolin with the corresponding distance as 333.89. Assuming that bats are the natural reservoir of coronaviruses, pangolin should be the intermediate host of SARS-CoV-2.

Besides, in Figure 6, the coronaviruses found on many other hosts, such as civets, canines, and felines, have a relatively smaller distance to SARS-CoV-2 compared with the distance from bat-CoVs to SARS-CoV-2. Further protein analysis excludes the similarity between SARS-CoV-2 and coronaviruses found in civets, canines, and felines, according to the last column in Table 2. Therefore, combined with our results based on genomes and proteins, the natural graph indicates that the most possible path of transmission should be from bats to pangolins to humans. This transmission path is predicted from mathematical analysis, rather than biological experiments, and the determination of the natural reservoir and any intermediate host of SARS-CoV-2 requires further study and analysis.



**Figure 6.** The natural graph of 13 possible host sources and SARS-CoV-2 group. The blue arrows represent the first-level relationship while the red ones represent the second-level relationships. First level indicates closer relationship.

#### 4. Discussion

SARS-CoV-2 has been spreading rapidly by human-to-human transmission, and phylogenetic analysis of SARS-CoV-2 strengthens our understanding of its origin and transmission paths. Genetic relationship between SARS-CoV-2 and known coronaviruses provides insights into the host identification, and protein analysis reveals the similarity more directly because proteins are the basic functional elements in the transmission and infection process. From the phylogenetic analysis performed in this study, we confirm that SARS-CoV-2 is most similar to SARS-CoV from a range of coronavirus sequences examined, but also forms a distinct separate cluster. Thus, SARS-CoV-2 should be classified as a new member of coronaviruses, the seventh CoV member that infects humans.

The host identification found the most possible transmission chain is: from bats to pangolins to humans. Regarding this chain, we should also pay attention to civets because the distance between civet-CoV group and SARS-CoV-2 is also relatively small from genome comparison, but a little larger than bat-CoVs though protein analysis. The sequencing results from the current technology sometimes include many ambiguous letters, such as 'N', which would lead to inaccurate results in the transformation from DNA sequences to a numerical vector. Though we have filtered out these sequences, it also decreases the size of dataset. It is possible that laboratories can get more sequences without these ambiguous letters and therefore the distances need to be modified, which might bring back civets into our consideration. Besides, although canine-CoV is not in the same group with SARS-CoV-2 on the first level (blue arrows shown in Figure 6), the distance is within a comparable distance as 893.11. Feline-CoVs are listed 4th closest neighbor to SARS-CoV-2 group, closer to canine-CoV. Both canine-CoV and feline-CoV are alpha coronaviruses, and the recombination between alpha and beta coronaviruses are also possible in the evolution of SARS-CoV-2. If so, the close

relationship between feline-CoV and SARS-CoV-2 strains might be due to the second possible chain from felines to canines to humans. This might be also another missing transmission path, but more evidence from biology is required to reach this conclusion.

In general, the limited number of the coronaviruses found in hosts, especially for pangolins, might be an issue. The calculation of natural vector is of high computational efficiency, thus once more sequencing experiments are performed and uploaded online by biological labs, we can add them into the current dataset and the results would be even more persuasive.

Meanwhile, currently available protein data of SARS-CoV-2 are mainly the primary sequences which consist of 20 amino acids, and if the structure of 11 proteins can be experimentally determined, it is possible to use the Yau-Hausdorff distance to study the relationship between protein structures [49]. Moreover, protein structures could be a powerful tool to detect protein-to-protein interaction and enhance our knowledge about the mechanics of SARS-CoV-2, therefore making it possible to develop medicines and vaccines for treating SARS-CoV-2 pathogens.

Since the outbreak of SARS-CoV-2 globally, more and more researchers have published their phylogenetic analysis using various techniques. In [50], the author collected 86 complete or near-complete genomes of SARS-CoV-2 strains on GISAID, and performed pair-wise nucleotide sequence alignment by ClustalX2. The analysis revealed 93 mutations over the entire genomes of SARS-CoV-2, located on either coding or non-coding regions, in contrast to our analysis of extracting the key information in the whole genome. On the other hand, Liu et al. and Anderson et al. have done research on the alignment of protein sequences from different sources [19,51], and they concluded that other than pangolins, snakes and turtles may also act as the potential intermediate hosts transmitting SARS-CoV-2 to humans. The host identification would always be updated based on new findings on experimental data, and we are also working on similar projects. The most significant difference between this work and other research is that we consider the coronaviruses found in each animal host as a single group and study the relationship between groups using mathematical techniques.

The result in [52] coincided with our results that pangolins are the probable zoonotic origin of SARS-CoV-2 outbreak. Despite the similar conclusion, their statement of the similarity between Pangolin-CoV and SARS-CoV-2 is 91.02% is based on alignment. In [53], the alignments of the spike surface glycoprotein receptor binding domain revealed four times more variations in the bat coronavirus RaTG13 than in pangolin-cov compared with SARS-CoV-2, suggesting the pangolin as a missing link in the transmission of SARS-CoV-2 from bats to human. Our approach provides a well-defined measurement of the distance between two groups of sequences, and both genomic and protein data suggested that pangolins are the most likely intermediate host of SARS-CoV-2. Some other research [5,6] focused on the phylogenetic analysis of spike protein data as well, which also provided insight into the study of the interaction with antiviral drugs.

**Supplementary Materials:** The following are available online at <http://www.mdpi.com/2073-4425/11/6/637/s1>, Supplementary file S1, Supplementary file S2, and Supplementary file S3 (the newick file of Figure 2).

**Author Contributions:** Conceptualization, S.S.-T.Y., C.Y. and R.L.H.; methodology, S.S.-T.Y.; validation, R.D. and S.P.; formal analysis, R.D. and S.P.; investigation, R.D. and S.P.; writing—original draft preparation, R.D. and S.P.; writing—review and editing, C.Y.; supervision, S.S.-T.Y.; project administration, S.S.-T.Y.; funding acquisition, S.S.-T.Y. All authors have read and agreed to the published version of the manuscript.

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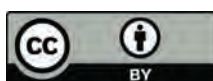
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# Exhibit 20



OPEN

# Animal sales from Wuhan wet markets immediately prior to the COVID-19 pandemic

Xiao Xiao<sup>1,2</sup>, Chris Newman<sup>3,4</sup>, Christina D. Buesching<sup>4,5</sup>, David W. Macdonald<sup>3</sup> & Zhao-Min Zhou<sup>1,6</sup>✉

Here we document 47,381 individuals from 38 species, including 31 protected species sold between May 2017 and November 2019 in Wuhan's markets. We note that no pangolins (or bats) were traded, supporting reformed opinion that pangolins were not likely the spillover host at the source of the current coronavirus (COVID-19) pandemic. While we caution against the misattribution of COVID-19's origins, the wild animals on sale in Wuhan suffered poor welfare and hygiene conditions and we detail a range of other zoonotic infections they can potentially vector. Nevertheless, in a precautionary response to COVID-19, China's Ministries temporarily banned all wildlife trade on 26th Jan 2020 until the COVID-19 pandemic concludes, and permanently banned eating and trading terrestrial wild (non-livestock) animals for food on 24th Feb 2020. These interventions, intended to protect human health, redress previous trading and enforcement inconsistencies, and will have collateral benefits for global biodiversity conservation and animal welfare.

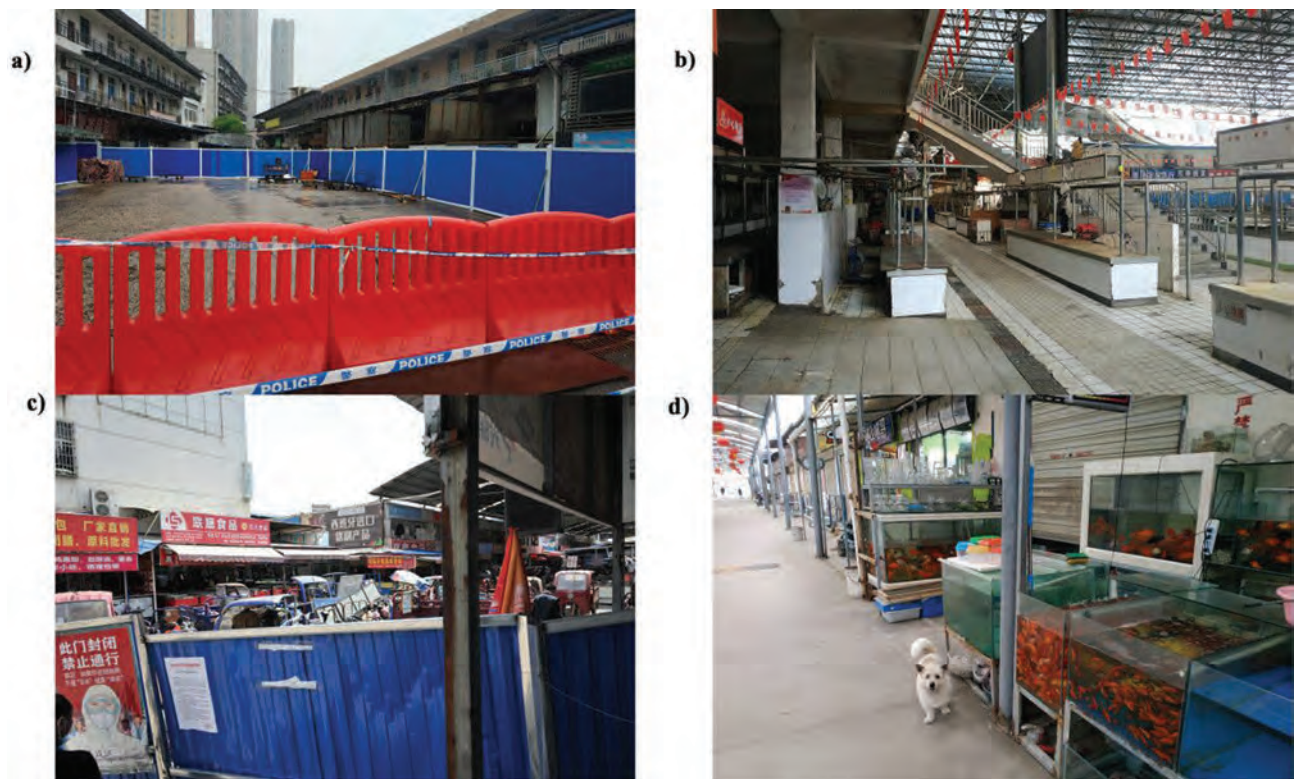
Alongside extensive research into the epidemiology, virology and medical treatment of SARS-CoV-2, known generally as COVID-19, it is also vital to better understand and mitigate any role that may have been played by the illegal wildlife trade (IWT) in China, in initiating this pandemic<sup>1</sup>. COVID-19 was first observed when cases of unexplained pneumonia were noted in the city of Wuhan, Hubei Province, in late 2019<sup>2</sup>. Like the SARS-CoV epidemic (another coronavirus, for which there is still no cure) that began in Guangdong Province in 2002<sup>3</sup>, this latest coronavirus most closely resembles types found in bats<sup>4</sup>. Initial media coverage suggesting that COVID-19 may have spilled-over via pangolins has been refuted<sup>5,6</sup>; probably pangolins are simply a natural reservoir of SARS-CoV-2<sup>7–9</sup> along with palm civets (*Paguma larvata*)<sup>10</sup>.

The World Health Organization (WHO) sent an investigative team to Wuhan, from 14 January–10 February 2021, to try to retrospectively ascertain what wildlife was being sold in local wet markets in this region<sup>1</sup>. Their findings were inconclusive, with markets having been closed down completely at that point for 4 months; however, they did recommend that pangolins should be included in the search for possible natural hosts or intermediate hosts of the novel coronaviruses<sup>1</sup>.

Here we present a unique and original dataset recording wild animal sales across Wuhan City's animal markets between May 2017 and November 2019. We investigate which wildlife species (including both wild-caught and farmed non-domesticated species) were actually being sold for food and as pets, what quantities were involved, and to what extent vendors violated their trading permits. We also list zoonotic pathogens recorded in Chinese wild animal markets and/ or farms since 2009, along with broader notes on infections established for these species. We evaluate these data in the context of China's renewed commitment to enforce and build on pre-existing laws within a culture of traditional wildlife exploitation. Finally, we make pragmatic policy recommendations for better regulating the animal trade pervasive in China, integrating with ethics, education and enforcement.

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**Figure 1.** (a) Huanan Seafood market, (b) Qiyimen live animal market, (c) Baishazhou market and (d) Dijiao outdoor pet market (note stray dog) photographed on 10th April 2020.

## Materials and methods

Serendipitously, prior to the COVID-19 outbreak, over the period May 2017–Nov 2019, we were conducting routine monthly surveys of all 17 wet market shops selling live wild animals for food and pets across Wuhan City (surveys were conducted by author X.X.). This was intended to identify the source of the tick-borne (no human-to-human transmission) Severe Fever with Thrombocytopenia Syndrome (SFTS), following an outbreak in Hubei Province in 2009–2010 in which there was an unusually high initial case fatality rate of 30%<sup>11</sup>. These shops selling live, often wild, animals included two at Baishazhou market (a large market comprising c. 400 other types of shop), seven at Huanan seafood market (c. 120 other shops), four at Dijiao outdoor pet market (c. 100 other shops), and four at Qiyimen live animal market (c. 40 other shops). Other shops sold a variety of goods, such as live and butchered livestock and poultry, dairy produce, fish, shellfish, other food-related products and domesticated pets (Fig. 1 shows the appearance of these markets upon reopening on 8th April 2020).

As an objective observer unconnected to law enforcement X.X. was granted unique and complete access to trading practices. On each visit, vendors were asked what species they had sold over the preceding month and in what numbers, along with the prices (US\$1:RMB¥6.759) and origin of these goods (wild caught or captive bred/farmed). Additionally, to substantiate interview data, the number of individuals available for sale at the time of each visit was noted, and animals were checked for gunshot wounds (from homemade firearms—gun ownership is strictly regulated in China<sup>12</sup>) or leg-hold (snap) trap injuries, indicative of wild capture. For 15 species (3 mammals and all 12 reptiles) sold by weight, vendors did not record the number of individuals sold. In these instances, we report numbers of individuals observed to be on sale during monthly visits.

In China, wild animals are state property protected by the Wild Animal Conservation Law (WACL 1988, revised in 2004, 2009, 2016 and 2018), in concert with the Criminal Law (Article 341)<sup>13</sup>. Any convicted trader of species, and/or products derived thereof, protected by China's list of Fauna under Special State Protection (LFSSP) and/or any non-native species listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Appendix I, II could face up to 15 years fix-term imprisonment accompanied by fines and/or the confiscation of property. Additionally, if any animal protected by China's List of Terrestrial Wild Animals of Significant Ecological, Scientific, or Social Value Protected by the State (LESS) is taken from a wild population and traded for the purpose of food, the offender could face up to 3 years fix-term imprisonment accompanied by criminal detention, surveillance and/or fines. Correspondingly, any utilization of these protected species should be approved by the wild animal conservation and animal quarantine administrations through various regulatory schemes. We therefore also noted if vendors had necessary permits allowing them to sell livestock; specifically a License for Domestication and Breeding of Wild Animals, a License for Trade and Processing of Wild Animals and the quarantine certificate, which must be displayed to customers according to the WACL (2018), Animal Epidemic Prevention Law (2013) and Special Provisions of the State Council on Strengthening the Food Safety Supervision and Administration (2007).



All protocols in the market surveys were reviewed and approved by the Ethics Committee of Hubei University of Chinese Medicine (No. 20161111). All vendors provided informed written consent to participate in these surveys, and all protocols were performed in accordance with relevant guidelines and regulations.

## Results

**Animal sales from Wuhan's markets.** Across all 17 shops, vendors reported total sales of 36,295 individuals, belonging to 38 terrestrial wild animal species, averaging 1170.81 individuals per month (Standard deviation (SD) = 445.01,  $n = 31$ ; Table 1). Including species sold by weight inflated this total to 47,381 individuals. Notably, no pangolin or bat species were among these animals for sale.

Almost all animals were sold alive, caged, stacked and in poor condition (Fig. 2). Most stores offered butchering services, done on site, with considerable implications for food hygiene and animal welfare. Approximately 30% of individuals from 6 mammal species inspected (labelled W in Table 1) had suffered wounds from gunshots or traps, implying illegal wild harvesting (Table 1). Thirteen of these 17 stores clearly posted the necessary permits from Wuhan Forestry Bureau allowing them to sell legitimate wild animal species (e.g., Siamese Crocodile (*Crocodylus siamensis*), Indian Peafowl (*Pavo cristatus*), Common Pheasant (*Phasianus colchicus*) and Amur hedgehog (*Erinaceus amurensis*)) for food; four shops had no such permit. Species names were given in Chinese only, with no clear taxonomic binomial designation. None of the 17 shops posted an origin certificate or quarantine certificate, so all wildlife trade was fundamentally illegal. Notably, vendors freely disclosed a variety of protected species on sale illegally in their shops, therefore they would not benefit from specifically concealing pangolin trade or the trade in any particular species, and so we are confident this list is complete (Table 1).

The most expensive wild mammal species sold for food was the marmot (*Marmota himalayana*) at over US\$ 25 per kg, while raccoon dogs (*Nyctereutes procyonoides*) and badgers (*Arctonyx albogularis* and *Meles leucurus*) were priced at c. \$ 15–20 per kg; hedgehogs retailed for as little as \$ 2–3 each; all wild caught and intended as food. Squirrels (*Callosciurus erythraeus* and *Sciurus vulgaris*) were sold as pets for c. \$ 25 each. The most expensive wild bird sold for food was the Indian peafowl (*Pavo cristatus*) at \$ 56 each, while captive-bred crested myna birds (*Acridotheres cristatellus*), prized for imitating human speech, were sold as pets for c. \$ 300. The Sharp-nosed pit viper (*Deinagkistrodon acutus*) was the most expensive reptile, at \$ 70 per kg. For comparison, the average retail prices of pork, poultry and fish in Wuhan were \$ 5.75, \$ 4.25 and \$ 2.32, respectively (source: Municipal Bureau of Commerce <http://sw.wuhan.gov.cn/html/ztlz/sjfb/scyx/jgjczb/>).

These traded species are capable of hosting a wide range of infectious zoonotic diseases or disease-baring parasites (see Supplementary Table S1 for a non-exhaustive summary of studies reporting diseases in these species in China since 2009).

## Discussion

Our findings illustrate both the range and extent of wildlife exploitation in Wuhan markets, prior to new trading bans linked to the COVID-19 outbreak, along with the poor conditions under which these animals were kept prior to sale. Circumstantially, the absence of pangolins (and bats, not typically eaten in Central China; media footage generally depicts Indonesia) from our comprehensive survey data corroborates that pangolins are unlikely implicated as spill-over hosts in the COVID-19 outbreak. This is unsurprising because live pangolin trading has largely ceased in China<sup>13</sup>.

We should therefore not be complacent, because the original source of COVID-19 does not seem to have been established. This is doubly important because false attribution can lead to extreme and irresponsible animal persecution. For instance, civets were killed *en masse* following the SARS-CoV outbreak<sup>5</sup>, and any unwarranted vilification or persecution of pangolins and bats in relation to COVID-19 would risk undermining otherwise very successful efforts to better protect and conserve wildlife in China.

Regarding our insights into broader IWT issues in Wuhan, the animals sold were relatively expensive, representing luxury food items, not cheap bushmeat (Table 1). We thus make an ethical distinction here between the subsistence consumption of bush meat in poorer nations, versus the sort of cachet attached to wild animal consumption in parts of the developed world, notably China<sup>14</sup>, but also Japan<sup>15</sup>. While c. 30% of mammals were clearly wild-caught, indicated by trapping and shooting wounds, the captive breeding of other species is commonplace in China. Raccoon dog fur farming is legal in China; however, due to a drop in fur prices, raccoon dogs are now frequently sold off in live animal markets, augmented by wild-caught individuals. Similarly, all American mink (*Neovison vison*) originated from fur farms—noting that SARS-CoV-2 has been reported in mink farms in Europe and North America<sup>16,17</sup>. In contrast, the captive breeding and sale of Siberian weasels (*Mustela sibirica*), is totally illegal in China, yet they are easy to breed, and sold openly, without attracting law enforcement. Indeed, prior to COVID-19 reforms, although enforcement officers from the Wuhan Forestry Bureau issued permits to market vendors, they were broadly disinterested in what species were sold. Furthermore, although animals were required to have an origin certificate and be quarantined to ensure they did not exhibit overt disease symptoms, no clear policy was enforced on these conditions. This is important because the species that were traded are capable of hosting a wide range of infectious zoonotic diseases or disease-baring parasites (Supplementary Table S1), aside from COVID-19. These range from potentially lethal viruses, for example, rabies, SFTS, H5N1, to common bacterial infections that, nevertheless, represent a risk to human health (e.g., *Streptococcus*). Indeed, globally, wildlife is thought to be the source of at least 70% of all emerging diseases<sup>18</sup>.

Legislative reform is also vital to clarify unequivocally which species are considered 'wild' and cannot be traded legally and safely. Another problem, as encountered by the WHO report is that, retrospectively, it proved difficult to ascertain which species were on sale, even to the genus level, relying solely on the responsible market authority's official sales records and disclosures<sup>1</sup>. As we<sup>19,20</sup>, and others<sup>21</sup>, have proposed previously, China's LFSSP and LESS must be updated to apply proper binomials, and to align with recent taxonomic revisions; for instance,

Species on sale	Monthly mean (and SD) number of individuals sold	Price (mean $\pm$ SD) \$ per individual
<b>Mammals</b>		
Raccoon dog ( <i>Nyctereutes procyonoides</i> ) <sup>W,R,E†</sup>	38.33 $\pm$ 17.24 (n = 30)	63.32 $\pm$ 15.46 (n = 5)
Amur hedgehog ( <i>Erinaceus amurensis</i> ) <sup>R,E†</sup>	332.14 $\pm$ 190.62 (n = 28)	2.66 $\pm$ 0.41 (n = 5)
Siberian weasel ( <i>Mustela sibirica</i> ) <sup>W,R,E†</sup>	(10.06 $\pm$ 12.09, n = 31)	11.24 $\pm$ 3.07 (n = 5)
Hog badger ( <i>Arctonyx albogularis</i> ) <sup>W,R,E†</sup>	(6.81 $\pm$ 5.37, n = 31)	72.79 $\pm$ 34.08 (n = 5)
Asian badger ( <i>Meles leucurus</i> ) <sup>W,R,E†</sup>	12.24 $\pm$ 7.39 (n = 29)	59.77 $\pm$ 15.89 (n = 5)
Chinese hare ( <i>Lepus sinensis</i> ) <sup>W,R,E†</sup>	168.96 $\pm$ 89.06 (n = 29)	16.87 $\pm$ 2.88 (n = 5)
Pallas's squirrel ( <i>Callosciurus erythraeus</i> ) <sup>R,P†</sup>	16.52 $\pm$ 4.87 (n = 23)	25.74 $\pm$ 7.59 (n = 5)
Masked palm civet ( <i>Paguma larvata</i> ) <sup>E†</sup>	10.69 $\pm$ 8.42 (n = 29)	62.73 $\pm$ 15.25 (n = 5)
Chinese bamboo rat ( <i>Rhizomys sinensis</i> ) <sup>E†</sup>	42.76 $\pm$ 20.68 (n = 29)	18.64 $\pm$ 7.58 (n = 5)
Malayan porcupine ( <i>Hystrix brachyura</i> ) <sup>E†</sup>	10.00 $\pm$ 0.00 (n = 29)	68.06 $\pm$ 14.23 (n = 5)
Chinese muntjac ( <i>Muntiacus reevesi</i> ) <sup>E†</sup>	10.00 $\pm$ 0.00 (n = 29)	142.62 $\pm$ 49.67 (n = 5)
Coypu ( <i>Myocastor coypus</i> ) <sup>F</sup>	5.00 $\pm$ 0.00 (n = 29)	28.70 $\pm$ 5.08 (n = 5)
Marmot ( <i>Marmota himalayana</i> ) <sup>F</sup>	15.00 $\pm$ 4.29 (n = 20)	81.37 $\pm$ 11.70 (n = 5)
Red fox ( <i>Vulpes vulpes</i> ) <sup>E†</sup>	30.00 $\pm$ 0.00 (n = 25)	60.96 $\pm$ 21.68 (n = 5)
Mink ( <i>Neovison vison</i> ) <sup>F</sup>	10.37 $\pm$ 1.92 (n = 27)	34.62 $\pm$ 14.78 (n = 5)
Red squirrel ( <i>Sciurus vulgaris</i> ) <sup>R,P†</sup>	16.43 $\pm$ 9.51 (n = 28)	26.04 $\pm$ 8.14 (n = 5)
Wild boar ( <i>Sus scrofa</i> ) <sup>W,R,E,*,†</sup>	(4.17 $\pm$ 5.77, n = 29)	319.57 $\pm$ 55.95 (n = 5)
Complex-toothed Flying Squirrel ( <i>Trogopterus xanthipes</i> ) <sup>E,P†</sup>	5.17 $\pm$ 27.85 (n = 29)	28.11 $\pm$ 9.64 (n = 5)
<b>Birds</b>		
Collared crow ( <i>Corvus torquatus</i> ) <sup>R,P</sup>	9.14 $\pm$ 20.18 (n = 29)	54.74 $\pm$ 8.43 (n = 5)
Spotted dove ( <i>Spilopelia chinensis</i> ) <sup>R,E†</sup>	200.00 $\pm$ 0.00 (n = 29)	7.54 $\pm$ 1.10 (n = 5)
Eurasian magpie ( <i>Pica pica</i> ) <sup>R,E,P†</sup>	21.54 $\pm$ 28.53 (n = 13)	10.21 $\pm$ 3.56 (n = 5)
Crested myna ( <i>Acridotheres cristatellus</i> ) <sup>R,P†</sup>	60.34 $\pm$ 20.61 (n = 29)	15.39 $\pm$ 16.23 (n = 5)
Chukar partridge ( <i>Alectoris chukar</i> ) <sup>E†</sup>	273.68 $\pm$ 45.24 (n = 19)	6.66 $\pm$ 1.38 (n = 5)
Ring-necked Pheasant ( <i>Phasianus colchicus</i> ) <sup>E†</sup>	80.00 $\pm$ 0.00 (n = 26)	14.80 $\pm$ 5.44 (n = 5)
Peacock ( <i>Pavo cristatus</i> ) <sup>E,P,*</sup>	15.00 $\pm$ 0.00 (n = 15)	55.63 $\pm$ 20.33 (n = 5)
Guinea fowl ( <i>Numida meleagris</i> ) <sup>F</sup>	35.00 $\pm$ 15.81 (n = 10)	12.13 $\pm$ 5.17 (n = 5)
<b>Reptiles</b>		
Beauty rat snake ( <i>Orthriophis taeniurus</i> ) <sup>R,E†</sup>	(7.00 $\pm$ 10.90, n = 28)	22.78 $\pm$ 15.36 (n = 5)
Red large-toothed Snake ( <i>Dinodon rufozonatum</i> ) <sup>R,E†</sup>	(7.78 $\pm$ 11.56, n = 27)	10.06 $\pm$ 4.84 (n = 5)
Many-banded krait ( <i>Bungarus multicinctus</i> ) <sup>R,E†</sup>	(3.18 $\pm$ 3.32, n = 27)	11.24 $\pm$ 3.41 (n = 5)
Ringed water snake ( <i>Sinonatrix annularis</i> ) <sup>R,P†</sup>	(19.00 $\pm$ 39.21, n = 29)	3.25 $\pm$ 1.24 (n = 5)
Short-tailed pit viper ( <i>Gloydius brevicaudus</i> ) <sup>R,E†</sup>	(5.96 $\pm$ 10.30, n = 27)	7.84 $\pm$ 1.93 (n = 5)
Chinese cobra ( <i>Naja atra</i> ) <sup>R,E†</sup>	(59.04 $\pm$ 54.93, n = 28)	N/A
Monocled cobra ( <i>Naja kaouthia</i> ) <sup>E†</sup>	(18.48 $\pm$ 48.50, n = 29)	20.42 $\pm$ 6.57 (n = 5)
Oriental rat snake ( <i>Ptyas mucosa</i> ) <sup>E†</sup>	(11.76 $\pm$ 20.44, n = 29)	18.94 $\pm$ 3.21 (n = 5)
Sharp-nosed pit viper ( <i>Deinagkistrodon acutus</i> ) <sup>E†</sup>	(3.69 $\pm$ 5.35, n = 26)	41.13 $\pm$ 16.65 (n = 5)
Siamese crocodile ( <i>Crocodylus siamensis</i> ) <sup>E,*</sup>	(2.07 $\pm$ 2.53, n = 27)	N/A
Big-eyed rat snake ( <i>Ptyas dhumnades</i> ) <sup>R,E†</sup>	(121.10 $\pm$ 138.11, n = 29)	10.36 $\pm$ 2.09 (n = 5)
King rat snake ( <i>Elaphe carinata</i> ) <sup>R,E†</sup>	(104.97 $\pm$ 85.07, n = 29)	N/A

**Table 1.** List of 38 species sold in Wuhan City markets between May 2017–Nov 2019, including the mean number of live individuals sold per month and price (mean  $\pm$  SD; n = survey rounds). Individuals sourced directly from the wild were inferred from wounds (W) and/or according to vendor responses (R). Species were sold either for food (F) and/or pets (P). The permitted species listed on the vendor's license are labelled with a \* symbol. The 31 species labelled with † are protected under the LESS. Because all reptiles and 3 mammal species (Siberian weasel (*Mustela sibirica*), Hog badger (*Arctonyx albogularis*) and Wild boar (*Sus scrofa*)) were sold by weight, vendors did not record the number of traded individuals for these species. Therefore, we include in parenthesis the average number of individuals X.X. counted on sale on his monthly market visits. Similarly, because reptiles were priced by weight (Chinese cobra (*Naja atra*): \$20.71  $\pm$  4.68 (n = 5) per kg; Siamese crocodile (*Crocodylus siamensis*): \$21.01  $\pm$  5.38 (n = 5) per kg; King rat snake (*Elaphe carinata*): \$21.90  $\pm$  5.77 (n = 5) per kg), we cannot give a price per individual, and thus indicate this as N/A in the Table. Standard deviation per species reflects variation in sales per month; complete consistency (SD = 0) implies a regular supply of individuals.



**Figure 2.** Poor welfare of animals on sale in Huanan seafood market: (a) King rat snake (*Elaphe carinata*), (b) Chinese bamboo rat (*Rhizomys sinensis*), (c) Amur hedgehog (*Erinaceus amurensis*) (the finger points to a tick), (d) Raccoon dog (*Nyctereutes procyonoides*), (e) Marmot (*Marmota himalayana*) (beneath the marmots is a cage containing hedgehogs), and (f) Hog badger (*Arctonyx albogularis*).

cobra snakes (*Naja atra*) can be farmed legally for food with permits, but wild caught species, such as water snakes and wolf snakes were also sold in Wuhan, labelled simply as ‘snakes’. Such an application of clear species names would allow for more effective prosecutions<sup>19</sup>. Furthermore, the WHO reports that market authorities claimed all live and frozen animals sold in the Huanan market were acquired from farms officially licensed for breeding and quarantine, and as such no illegal wildlife trade was identified<sup>1</sup>. In reality, however, because China has no regulatory authority regulating animal trading conducted by small-scale vendors or individuals it is impossible to make this determination<sup>1,21</sup>. Similar discrepancies concerning species identification and origins afflict investigations around the world<sup>22</sup>.

Another important animal trade that requires attention, outside of exploitation as food, is the supply of pets, like the squirrels and crested myna birds sold in Wuhan’s market. Our previous research found annual trade volumes equivalent to c. 17,000 parrots and c. 160,000 turtles (many turtles being invasive if escaping to the wild) sold online as pets via Taobao.com between 2016–2017, in contravention of China’s WACL and/or the Animal Epidemic Prevention Law<sup>23–25</sup>. While not currently the vector of any major viral epidemics, it would be naive to imagine that unconventional pets do not still also pose a serious concern for public health<sup>26</sup>. This potential for disease is likely exacerbated by poor sanitary and welfare conditions (Fig. 2).

## Conclusion

Ultimately, changing the attitudes of consumers is crucial to reduce IWT in China. Efforts to stem the trade in charismatic species, such as elephants/ivory, rhino/horn, tiger bones, etc., have achieved modest success, and have garnered worldwide media attention and public concern<sup>27</sup>. Nevertheless, despite a general decrease in wildlife poaching and trafficking in China<sup>12</sup>, attempts to dissuade people from consuming lower-profile, but also higher-volume, species have still fallen-short. Crucially, efforts must be made to change the normative values of consumers through education, raising awareness not only for health, but also for animal welfare and global biodiversity concerns, else continued demand, despite recent national bans, may merely push suppliers into black-market and dark-web operations<sup>23</sup>. Our own previous investigation found that, in China, a substantial desire to purchase and/or own wildlife products as ‘prestige items’ still transcends social classes, age groups, education levels and rural versus urban residents, even though this involves breaking the law<sup>14</sup>. In major part this is because protective legislation has not been enforced consistently, fostering a nonchalant disregard for wildlife exploitation<sup>23</sup>.



President Xi Jinping has said that: *the COVID-19 outbreak is a major test of China's system and capacity for governance, and we must sum up the experience and draw a lesson from it*. In an early precautionary response to the COVID-19 crisis, on the 26th of January 2020, the Chinese government (State Administration for Market Regulation, Ministry of Agriculture and Rural Affairs and National Forestry and Grassland Administration) temporarily banned the sale of all wild animal and their products in markets, restaurants and over e-commerce, to least until the conclusion of the epidemic. Subsequently, on 24th Feb 2020, the Standing Committee of the National People's Congress implemented a permanent ban on trading terrestrial wild (non-livestock) animals and consuming them as food. The Hubei provincial government announced on 11th April 2020 that the sale of live wild animals and poultry will be strictly prohibited as markets re-open in Wuhan. Ultimately China plans to invest c. \$30 million to update Wuhan open-air markets to megamalls and inspire social capital. This is a major and commendable step, redressing previous tacit tolerance for many forms of wildlife trade in China, often already illegal under WACL and/or the CITES, which also carries a huge collateral benefit for global biodiversity and animal welfare<sup>28, 29</sup>. In response to the pandemic, on April 12th 2021 the WHO (co-signed by UNEP and OIE) released interim guidance for 'Reducing public health risks associated with the sale of live animals on mammalian species in traditional food markets'<sup>30</sup>. Adopting these more responsible practices has the potential to save countless lives in the future.

## Data availability

All datasets used in this study are included in the main text and the electronic supplementary material.

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## Author contributions

X.X. collected these data; C.N., C.D.B. and Z.M.Z. contributed to the concept and writing of the manuscript; D.W.M. participated in scientific discussions; Z.M.Z. supervised and managed the project.

## Competing interests

The authors declare no competing interests.

## Additional information

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# Exhibit 21



## Chapter 19

### Biosafety and Biohazards: Understanding Biosafety Levels and Meeting Safety Requirements of a Biobank

Lisa Ta, Laura Gosa, and David A. Nathanson

#### Abstract

When it comes to biobanking and working with different types of laboratory specimens, it is important to understand potential biohazards to ensure safety of the operator and laboratory personnel. Biological safety levels (BSL) are a series of designations used to inform laboratory personnel about the level of biohazardous risks in a laboratory setting. There are a total of four levels ranked in order of increasing risk as stipulated by the Center of Disease Control and Prevention (CDC) (Biosafety in microbiological and biomedical laboratories, 5th edn. HHS publication no. (CDC) 21-1112. <https://www.cdc.gov/biosafety/publications/bmbl5/bmbl.pdf>. Accessed 2 Jan 2016, 2009). We will address the main distinctions between these levels including briefly introducing hazards characteristics that classify biohazardous agents, as well as define the essentials in meeting safety requirements.

**Key words** Biosafety, Safety requirements, Biohazard, Biosafety levels, Personal protective equipment

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#### 1 Introduction

BSLs are a series of safety precautions that will help reduce laboratory personnel's risk of exposure to potentially infectious biohazardous agents. There are four biosafety levels that are implemented and defined by the CDC. Each biosafety level has specific containment controls, which include microbiological practices, safety equipment, and facility safeguards to protect laboratory workers, the public and the environment from exposure to infectious biohazards that are used in the lab. These containment controls build on the preceding level of safety, in a pyramid-like fashion, as the risk level increases. Biosafety levels dictate the type of work practices that are allowed to occur in a lab setting and play a huge role in the design of the facility.

##### **1.1 Biohazardous Agents Risk Assessment**

Risk assessment plays an important role in determining the biosafety level of a lab. The CDC defines risk assessment as the process by which the appropriate selection of practices and safe guards

respective of the agents are implemented to prevent laboratory-associated infections. Risk assessment is bound by two main categories: agent hazards and laboratory procedure hazards. Similarly, the main determinants of biosafety levels are dependent on the work performed in the laboratory as well as the agents used. Mainly, the following parameters are considered during the risk assessment process:

1. Infectivity—the ability of a pathogen to establish an infection or a pathogen’s capacity for horizontal transmission,
2. Transmissibility, and
3. Nature of work conducted.

Specifically, when investigating biohazardous agents that will be handled and manipulated by the laboratory, risk assessment involves scrutinizing the principal hazardous characteristics of an agent. These include:

1. Capability to infect and cause disease in a susceptible human or animal host.
2. Virulence as measured by the severity of the resulting disease.
3. The availability of preventive measures and effective treatments for disease
4. Additional characteristics of hazardous agents include route of transmission of laboratory infection, infective dose, stability of agent in the environment, host range, and its endemic nature.

All these factors contribute to the respective agent’s risk assessment. The World Health Organization (WHO) has established a risk group classification for hazardous agents used in a biomedical setting [1]. These agents are stratified mainly based on the route of transmission of the natural disease. It is important to note that these four risk group classifications do not equate to biosafety levels implemented in a laboratory setting.

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## 2 Biosafety Level Distinctions

There are four biosafety levels that are implemented and defined by the CDC. Biosafety levels are an important and integral part of biohazardous communication and training for work in these facilities. Most institutions have biosafety review boards and committees that ensure that these guidelines are followed and can often address laboratory-specific questions. Clinical work involving human specimens are generally characterized under BSL2 guidelines, though oftentimes the infectious natures of clinical specimens are unknown. BSL2 level of compliance aligns well with Occupational Safety and Health Administration (OSHA) (the oversight

body for enforcement of safety and health legislation) standard when working with specimens that contain blood or blood traces [2]. Strict adherence to guidelines and suggestions given by the CDC will help communicate a safer workspace and promote compliance in the laboratory. This chapter addresses biosafety level distinction and classification in a standard laboratory but does not address the specific guidelines that are given for vertebrate animal biosafety level criteria. A thorough and comprehensive exploration of biosafety levels, safety practices, and regulatory standards for animal biosafety levels could be found in the CDC's Biosafety in Microbiological and Biomedical Laboratories [3].

## **2.1 Biosafety Level 1**

Biosafety level 1 (BSL1) is the lowest risk level and involves work and procedures performed with established and characterized strains of microbes that are not known to consistently cause disease in healthy adult humans. These agents generally pose minimal threat to environment. Examples of these microbes include: *Bacillus subtilis*, *Naegleria gruberi*, *S. cerevisiae*, and *E. coli*. Research conducted in BSL1 laboratories is generally performed on open laboratory benches without the need for special containment. The CDC advises standard microbiological practices to be followed which are described below.

### **2.1.1 BSL1 Procedures and Practices**

1. Hand washing is required after working/handling potentially hazardous materials and before leaving the laboratory
2. Eating, drinking, smoking, handling contact lenses, applying cosmetics, and storing of food are not permitted in laboratory areas. Refrigerators and freezers used in the laboratories must be clearly labeled for laboratory use only.
3. Mouth pipetting is prohibited.
4. Reduced use of sharps, such as glass Pasteur pipettes, needles, and scalpels, is advised including the implementation of engineering controls and proper use of sharps needles (no recapping of needles, disposal of used needles in puncture-proof containers etc.).
5. Minimize the creation of splashes and aerosols.
6. Decontamination of work surfaces after work with microbial/ other BSL1 designated agents.

### **2.1.2 Safety Equipment for BSL1**

BSL1 labs do not require special containment equipment like biological safety cabinets. The following are a list of primary barriers and personal protective equipment that are used in a BSL1 setting:

1. General laboratory coats are recommended.
2. Use of protective eyewear is required when conducting procedures that could potential create aerosols and splashes of hazardous materials.

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3. Gloves should be worn when handling hazardous or potentially hazardous materials to protect hands from exposure. Gloves should be changed if contaminated or punctured. Gloves should not be reused, and alternatives to latex should be available in case laboratory personnel have latex allergies. Hands should always be washed prior to leaving the laboratory.

**2.1.3 Laboratory  
Facilities for BSL1**

1. Available sink for hand washing.
2. Doors should be available to separate workspace from the rest of the facility and to provide access control.
3. The laboratory bench should be resistant to water, heat, organic solvents, acids, and bases.
4. Laboratory chairs should be made entirely of nonporous material and can be easily cleaned and decontaminated.

**2.2 Biosafety Level 2**

Biosafety level 2 (BSL2) builds on the safety precautions and procedures of BSL1. Biohazardous agents that are under BSL2 pose moderate hazards to the environment and to laboratory personnel if accidentally exposed by skin contact, inhalation, or ingestion. Examples of BSL2 hazardous agent are *Staphylococcus aureus*, *Salmonella*, and human cell lines. BSL2 labs differ from BSL1 lab by the additional necessary training specific for handling BSL2 pathogenic agents. These laboratories also have restricted access to workspaces where BSL2 hazardous agents are handled, used, and manipulated. Lastly, all procedures where infectious or possibly infectious aerosols/splashes could be created are conducted in biological safety cabinets (BSC).

**2.2.1 BSL2 Procedures  
and Practices**

1. Access to laboratory should be restricted when work is being conducted using BSL2 hazardous agents.
2. Proper warning signs regarding the potential hazards should be evident to everyone entering the laboratory.
3. Laboratory personnel should be properly trained in handling BSL2 agents
4. Laboratory personnel should be offered immunizations for agents that are handled in the laboratory.
5. A laboratory specific biosafety manual must be prepared, implemented and easily accessible.
6. Infectious and potentially infectious materials should be placed in a durable, leakproof container during collection, handling, processing, storage and transport.
7. Laboratory equipment should be routinely decontaminated after spills, splashes etc.
8. Spills involving infectious materials should be contained and decontaminated by properly trained personnel.



9. Equipment exposed to infectious agents should be cleaned and decontaminated before removal from the laboratory for any occasion.
10. All procedures involving the handling and manipulation of BSL2 agents should be conducted in a BSC or other physical containment devices.
11. Animals and plants not associated with the work performed will not be permitted in the laboratory.

*2.2.2 Safety Equipment  
for BSL2*

BSL2 laboratories include all of the safety equipment and precautions used for BSL1 labs. This includes all engineering controls, safety equipment, and any special laboratory facilities. The following are a list of primary barriers and personal protective equipment that are used in a BSL2 setting.

1. Special containment equipment like biological safety cabinets must be used for procedures where infectious aerosols could potentially be created including pipetting, centrifuging, grinding, blending, shaking, sonicating, or general handling of open containers containing infectious materials.
2. Protective laboratory coats and gowns must be worn at all times while working with hazardous materials and removal of protective clothing must be done before leaving the laboratory.
3. Eye and face protection (i.e., goggles, face shield, mask) should be used for any anticipated splashes, sprays, and other possible risk exposure.

*2.2.3 Laboratory  
Facilities for BSL2*

1. Laboratory doors should be self-closing and only grant restricted access to authorized personnel while work is being conducted.
2. The design of these laboratories should facilitate easy cleaning and decontamination.
3. Absorbent floor coverings like rugs and carpets are not permitted.
4. Windows that open to the exterior are not recommended; however, if they exist, they should be fitted with screens and sealed.
5. Installed BSCs should be placed so as they do not interfere with the room's air supply and exhaust and are a sufficient distance away from doors and heavily occupied areas of the laboratory.
6. BSCs should be certified annually. HEPA filter exhausted air from a Class II BSC can be safely recirculated back into the lab.
7. Eyewash stations should be readily available.

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8. An autoclaving facility or another method of laboratory waste decontamination should be readily accessible and available (i.e., incinerator).
9. Vacuum lines should be primed and protected with liquid disinfectant traps.

### **2.3 Biosafety Level 3**

Biosafety Level 3 (BSL3) builds on the safety precautions and procedures of BSL1 & 2. This includes all engineering controls, safety equipment, and any special laboratory facilities. Biohazardous agents that are under BSL3 are indigenous, exotic and may cause serious or lethal disease through respiratory transmission. Examples of BSL3 hazardous agents are *Mycobacterium tuberculosis*, SARS coronavirus, *Chlamydia psittaci*, etc. BSL3 labs differ from BSL2 labs by the nature of transmission of hazardous agents. BSL3 labs also require the added precaution of directional airflow (negative air flow) to ensure that air flows from nonlaboratory areas into laboratory areas.

#### **2.3.1 BSL3 Procedures and Practices**

1. Laboratory personnel must receive specific training in handling and manipulation of BSL3 agents, which can be potentially lethal.
2. All procedures involving the handling and manipulation of such agents must be performed in a BSC or other physical containment device.
3. Materials that need to be decontaminated outside of the immediate laboratory need to be transported in a leakproof, secure, and durable container.
4. The universal biohazard symbol must be visibly placed on doors at the laboratory entrance.
5. Exposures to infectious materials must be evaluated immediately and procedures described in the laboratory biosafety manual must be followed. All incidents must be reported to the laboratory supervisor and lab records must be maintained.

#### **2.3.2 Safety Equipment for BSL3**

1. All procedures conducted in a BSL3 laboratory that involves the handling of infectious material must be conducted using a Class II/Class III biosafety cabinet.
2. Person protective equipment (PPE) includes a solid front with a tie-back laboratory attire or wrap around gowns, scrub suits or coveralls. The PPE worn in BSL3 laboratories should not be worn outside the lab at any time. Some BSL3 PPEs may be reusable, but must be decontaminated before they are laundered.
3. In rooms containing infected animals, eye, face, and respiratory protection must be used.

*2.3.3 Laboratory  
Facilities for BSL3*

1. Laboratory access is restricted only to authorized and trained personnel.
2. BSL3 laboratories must be accessed through two separate self-closing and locking doors. An anteroom, where clothing may be changed, and proper PPE adorned, is suggested to be situated in the passageway between the two self-closing doors.
3. The laboratory must be designed with minimal horizontal surfaces so that it can be easily cleaned and decontaminated.
4. All crevices in the floor, wall, ceiling, doors, ventilation openings, and surfaces should be sealed.
5. Ceilings and walls should have a smooth finish and all surfaces should be easy to clean and decontaminate.
6. Floors must be slip-resistant, waterproof, and resistant to chemical. The installation of seamless, sealed, resilient floors should be considered.
7. The entire laboratory must be decontaminated in case there are major renovations, maintenance, shut downs, or any other significant changes to the laboratory space.
8. All vacuum lines must be protected with HEPA filters in addition to liquid disinfectant in the traps.
9. BSL3 laboratories must have ducted air ventilation systems. This system provides sustained directional airflow by drawing air from clean areas into the laboratory and moving it toward potentially contaminated areas. The space should be designed such that under conditions of failure, the airflow will not be reversed. Some pointers to remember about the ventilation system are:
  - (a) Laboratory personnel should be able to easily identify the direction of airflow.
  - (b) A visual monitoring device indicating the directional airflow should be placed at the entrance of the laboratory. Audible alarms to notify airflow disruption are preferred.
  - (c) Laboratory air exhaust should not recirculate to any other areas of the building
10. HEPA filter housing should have gas-tight isolation dampers, decontamination ports and/or bag-in/bag-out capability (with the appropriate decontamination procedures). The filters and the housing should allow for leak testing of each filter and should be tested and certified annually.
11. HEPA filtered exhaust air from a Class II BSC can be safely recirculated into the laboratory environment only if they are recertified and tested annually and used under manufacturer's recommendations. BSCs can be directly exhausted outside

through a hard connection or connected to the laboratory's exhaust system.

12. Class III BSCs must be hard connected to the cabinet's second exhaust HEPA filter.
13. Supply air for BSCs must be maintained so that negative pressurization of the cabinet is maintained.
14. Containment devices that contain HEPA filtration (i.e., BSCs) will serve as primary barrier devices for equipment that have the potential to produce infectious aerosols. HEPA filters must be tested and replaced annually.
15. Laboratory enhancements may be required based on risk assessment of the BSL3 laboratory. Such enhancements may include: an anteroom for clean storage of equipment, supplies and dress-in, shower-out capabilities; gas tight dampers for laboratory isolation; final HEPA filtration of laboratory exhaust air in addition to HEPA filters already installed on containment devices; laboratory effluent decontamination; and advanced access control devices (i.e., biometrics).
16. Facility design, operational procedures and parameters must be documented prior to full operation of BSL3 laboratory. The entire facility must be reverified and documented annually.

#### **2.4 Biosafety Level 4**

Biosafety Level 4 (BSL4) laboratories are the highest level of biological safety, and are very rare. They are usually separate facilities that are physically disconnected from other facilities and sufficiently isolated. They build on the safety precautions and procedures of BSL1, 2, and 3 laboratories. This includes all engineering controls, safety equipment, and any special laboratory facilities. Biohazardous agents that are under BSL4 are dangerous and exotic and pose a high risk through aerosol/respiratory transmission in the laboratory that can lead to life-threatening disease and are lethal. Vaccines and treatments are generally not available for these agents. Some investigated agents in which routes of transmission remain unclear are given BSL4 designation. Examples of BSL4 hazardous agents include Ebola, Marburg, and Lassa Viruses and Crimean-Congo hemorrhagic fever. BSL4 labs differ from BSL3 labs by the specific training required by laboratory personnel and staff in handling extremely hazardous infectious agents. This is inclusive of primary and secondary containment and all standard and special practices that involve handling, manipulation, and storage of these dangerous BSL4 agents. BSL4 laboratories are divided into two types, cabinet laboratories and suit laboratories. The differences between the two as well as additional BSL4 specific protective measures will be discussed in detail below.

*2.4.1 BSL4 Procedures  
and Practices*

1. Only people whose presence is required for scientific or other necessary support purpose are authorized to enter BSL4 laboratory spaces.
2. All entries into the facility must be properly logged including date, time, and names of all persons entering and leaving the laboratory.
3. Laboratory personnel must change clothing before entering BSL4 laboratory space.
4. Laboratory personnel must shower before exiting BSL4 space.
5. Entry and exit of laboratory must be done through these specific clothing changing rooms except in the event of an emergency.
6. Used laboratory clothing must be treated as contaminated materials and should not be removed from the inner changing room through the personal shower. They should be thoroughly decontaminated before laundering.
7. All materials exiting BSL4 laboratories must be thoroughly decontaminated.
8. It is crucial that laboratory supervisors are responsible for oversight over laboratory personnel, this includes ensuring that laboratory personnel:
  - (a) Receive appropriate training for specific operation and procedures of the respective BSL4 facility.
  - (b) Demonstrate high proficiency in standard and special practices when working with BSL4 containment and hazardous agents.
  - (c) Receive necessary annual updates and are given additional training when any procedural or policy changes occur.
9. Biological materials that are removed from the laboratory must be transferred in a nonbreakable, sealed primary container and then further enclosed in a nonbreakable, sealed secondary container. These materials must be transferred through a disinfectant dunk tank, fumigation chamber, or a decontamination shower. Once removed from the laboratory, packaged material must remain viable and intact and must not be opened outside of BSL4 containment unless inactivated by a validated method.
10. Supplies, equipment, and materials not brought in to the BSL4 laboratory through the changing room must be brought through a previously decontaminated double-door autoclave, fumigation chamber, or airlock. After securing the outer doors, personnel within the laboratory may retrieve the materials by opening the interior doors of the autoclave, fumigation chamber, or airlock. The doors of the fumigation chamber or autoclave must be locked in a manner that prevents opening of the



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outer door unless the autoclave or fumigation chamber has completed a decontamination cycle.

11. Only necessary equipment and supplies should be stored inside the BSL4 laboratory.
12. Emergency procedures and protocols must be established and include plans for medical emergencies, facility malfunctions, escaped animals, and other emergencies. Training for emergency procedures must be provided to all laboratory staff.

*2.4.2 Safety Equipment  
for BSL4*

*Cabinet laboratory:* All work involving infectious materials in the laboratory must be conducted in a Class III BSC. Specific class III BSC protocols include:

- (a) Decontaminated materials passing out of Class III BSCs must go through a double-door and pass through autoclaves. Autoclave doors must be interlocked so they only one can be opened at any given time and be automatically controlled so that the outer autoclave door can be opened after the decontamination cycle has been completed.
- (b) Class III BSC must have passed through dunk tank, fumigation chamber, or equivalent decontamination methods so materials and equipment that cannot be decontaminated in the autoclave can be safely removed from the cabinet. Containment must be maintained at all times.
- (c) HEPA filters must be placed on the supply air intake and two HEPA filters in series on the exhaust outlet of the unit. There must be gas tight dampers on the supply and exhaust ducts of the cabinet to permit gas or vapor decontamination of the unit. Ports for injection of test medium must be present on all HEPA filter housings.
- (d) The interior of the BSC must be have a smooth finish for easy cleaning and decontamination; all sharp edges must be eliminated to reduce the risk of cuts and glove tears. All equipment in the BSC should also be free of sharp edges.
- (e) Class III cabinet gloves must be inspected prior to use and changed if necessary if damaged. Gloves should be replaced annually when cabinet is recertified.
- (f) No personal clothing, jewelry or other items except eyeglasses are allowed in the BSL4 past the shower area.
- (g) Disposable gloves are required underneath cabinet gloves for added protection. Gloves cannot be worn outside of the laboratory

*Suit laboratory:* All work conducted in a BSL4 suit laboratory must be conducted in a one-piece positive pressure supplied air suit.

- (a) All manipulations and handling of infectious agents must be performed within a primary barrier system (i.e., BSC) that is HEPA filtered. HEPA filtered air from Class II BSC can be safely recirculate back into the laboratory space.
- (b) Laboratory personnel must wear protective laboratory clothing like scrub suits before entering the room for donning positive pressure suits.
- (c) Disposable gloves must be worn to protect against breaks/tears in the outer suit gloves. Disposable gloves cannot be worn outside of the change area.
- (d) Outer suit gloves are decontaminated during laboratory operations.

*2.4.3 Laboratory  
Facilities for BSL4*

*Cabinet laboratories facility requirements:*

- (a) BSL4 laboratories are usually in a separate building or in an isolated and restricted zone of a shared building.
- (b) The laboratory must have a dedicated supply and exhaust air, as well as vacuum lines and designated decontamination systems.
- (c) Rooms in the facilities must be arranged so there is sequential passage from a dirty changing area to personal shower and out into a clean change room before exiting the BSL4 facility.
- (d) The facility should have an automatically activated emergency power source to regulate the life support systems, alarms, laboratory exhaust system, lighting, entry and exit controls, BSCs, and other door gaskets in the event of emergencies.
- (e) It is required for BSL4 facilities to have a double door autoclave, fumigation chamber, dunk tank, or ventilated airlock at the containment barrier for the passage of items or equipment.
- (f) There must be a hands-free sink near the door of the cabinet rooms, inner change rooms and outer change room. All sinks in rooms containing Class III BSC must be connected to the wastewater decontamination system.
- (g) Drains in laboratory floor must be connected directly to the liquid waste decontamination system.
- (h) Plumbing or any other services that penetrate the laboratory walls, floors, or ceiling must be installed to ensure that there is no backflow from the laboratory. Atmospheric venting systems must have two HEPA filters in series and be sealed up to the second filter.
- (i) Windows must be break resistant and sealed.

- (j) Central vacuum systems are not recommended, but if using such a system, it must not serve any other areas besides the room containing the cabinet.
- (k) The facility should have a dedicated nonrecirculating ventilation system, and such HVAC systems can only be shared amongst similar laboratories of BSL4 designation. Laboratory must be maintained at negative pressure to surrounding areas.
- (l) There must be multiple exhaust fans. It is recommended to have multiple supply fans. Supply and exhaust fans must be interlocked to prevent positive pressurization of the laboratory.
- (m) A device with alarm capabilities should be used to monitor the facility's ventilation system in case there is any malfunction in the system.
- (n) All supply airs to the cabinet room and exhaust air exiting the BSL4 facility must past through two HEPA filters.
- (o) Fumigation chambers, dunk tanks, or equivalent decontamination methods must be provided for materials and equipment that cannot be decontaminated in the autoclave to be safely removed from the cabinet room.
- (p) Liquid waste from cabinet room floor drains, sinks, and autoclave chambers within the cabinet room must be decontaminated preferably heat treatment before being discharged to the sanitary sewer. Liquid waste from showers and toilets do not require treatment.
- (q) Autoclaves that open outside of the laboratory must be sealed with a bioseal that is durable, airtight, and capable of expansion and contraction. Gas discharge from the autoclave chamber must also be decontaminated.
- (r) Cabinet BSL4 facilities must be reviewed and operational parameters tested and verified annually.

*Suit laboratory facility requirements:* They have the same requirements as cabinet laboratories and include additional provisions:

- (a) BSL4 suit laboratories usually exist in a separate building or an isolated zone in a building.
- (b) Rooms in facility must be arranged to ensure that directional flow through chemical shower, inner change room, personal shower, and finally outer clean changing area.
- (c) BSL4 entry must be through an airlock with fitted, airtight doors.

- (d) A chemical shower is required to decontaminate the surface of the positive pressure suit before worker leaves the laboratory. In the event where an emergency exit is required, or if the chemical shower system fails, gravity-fed supply of chemical disinfectant is needed.

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# Exhibit

## 22





BIOETHICS FORUM ESSAY

## Chinese Bioethicists: Silencing Doctor Impeded Early Control of Coronavirus

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by Ruipeng Lei and Renzong Qiu

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**The death of Dr Li Wenliang from COVID-19 is heartbreaking for our country**

think that it is a good time for our country to reflect on those deficiencies and consider reforms.

Dr. Li was an ophthalmologist working at a hospital affiliated with Wuhan University. On December 30, 2019, when the Wuhan Health Commission issued an urgent notice on the treatment of pneumonia with unknown causes, Dr. Li treated a patient with an eye disease who had symptoms that suggested pneumonia. About at 5 pm that day, he sent a WeChat message to a group of his school classmates saying that “7 cases of SARS have been confirmed who have been at South China Seafood and Fruits Market, and now are isolated at Emergency Department in the Post Lake Wards of our hospital.” He added, “The latest news is that coronavirus infection has been confirmed and virus typing is under way” and “Don’t spread the word outside our group. Let your family and loved ones take precautions.” A screenshot of the group chat was uploaded to a public website and spread. This is how Dr. Li became the epidemic’s whistle blower.

On January 3 Dr. Li was detained and questioned by the local police at the Wuhan Municipal Bureau for Public Security. The details of the conversation were not disclosed, but the result was a reprimand for an “unlawful act,” which is that he “made untrue remarks about 7 confirmed cases of SARS at South China Fruits and Seafood Market.”

The police then required Dr. Li to agree to two statements. The first one was: “Public police agency hopes you will actively cooperate with our work, listen to the admonition made by civil police, and end your unlawful act. Can you do it?” Dr. Li answered, “Can.” The second statement was: “If you are unrepentant, and continue your unlawful act, you will be punished by law. Do you understand?” Dr. Li replied, “Understand.” Then he signed his name. Seven of Dr. Li’s classmates also signed the Form of Reprimand.

The Form of Reprimand did not specify which article in China’s constitution was violated by Dr. Li and his schoolmates. We searched the constitution and couldn’t find any article that applies. The police act to admonish them.

China's constitution states that citizens have "freedom of speech" (Article 35). WeChat, the Chinese multipurpose messaging, social media, and mobile payment app with about 1 billion users in mainland China, enables Chinese citizens to enjoy the right of expression. However, this right is limited. Some limitations can be ethically justified. For instance, we just had a meeting with law experts to call the legislature to ban the videos that show abuse of pets. Other limitations on citizens' speech include pornography; expression or images of violence; racial, gender, or other prejudices; and techniques for committing suicide or murder. However, it is not very clear what should be censored and what should not be censored. For example, cyber police usually use the reason of maintaining social stability to suppress individual right of expression. The police report on Dr. Li stated, "Your behavior severely disrupts social order." But it is not clear which expressions undermine social stability.

Dr. Li's group chat concerned a professional issue, how to control a possible epidemic. The content of the chat would have provided very important information to hospitals, public health officers, and China's center for disease control for controlling the epidemic. In an interview with a journalist Dr. Li talked about his motivation for issuing his message: since most of his classmates were also clinicians, he want to remind them to take precautions.

After the admonition by police Dr. Li kept working in clinical practice and, unfortunately, became infected with the virus and died. Dr. Li is a martyr in the fight against the COVID-19 epidemic. The infringement on his right of expression is both unethical and unlawful, and it impeded early control of the epidemic. Now with the approval of the central government, the National Supervisory Commission, an agency that investigates unlawful acts of governmental officials and judiciary officers, has sent an investigation team to Wuhan to conduct a comprehensive investigation into the issues that the public has raised concerning Dr. Li. We wait for the results of their investigation.

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## RECENT CONTENT

BIOETHICS FORUM ESSAY

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Ending Unequal  
Treatment Requires A

# Exhibit 23





# Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China

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## Summary

**Background** A recent cluster of pneumonia cases in Wuhan, China, was caused by a novel betacoronavirus, the 2019 novel coronavirus (2019-nCoV). We report the epidemiological, clinical, laboratory, and radiological characteristics and treatment and clinical outcomes of these patients.

**Methods** All patients with suspected 2019-nCoV were admitted to a designated hospital in Wuhan. We prospectively collected and analysed data on patients with laboratory-confirmed 2019-nCoV infection by real-time RT-PCR and next-generation sequencing. Data were obtained with standardised data collection forms shared by WHO and the International Severe Acute Respiratory and Emerging Infection Consortium from electronic medical records. Researchers also directly communicated with patients or their families to ascertain epidemiological and symptom data. Outcomes were also compared between patients who had been admitted to the intensive care unit (ICU) and those who had not.

**Findings** By Jan 2, 2020, 41 admitted hospital patients had been identified as having laboratory-confirmed 2019-nCoV infection. Most of the infected patients were men (30 [73%] of 41); less than half had underlying diseases (13 [32%]), including diabetes (eight [20%]), hypertension (six [15%]), and cardiovascular disease (six [15%]). Median age was 49·0 years (IQR 41·0–58·0). 27 (66%) of 41 patients had been exposed to Huanan seafood market. One family cluster was found. Common symptoms at onset of illness were fever (40 [98%] of 41 patients), cough (31 [76%]), and myalgia or fatigue (18 [44%]); less common symptoms were sputum production (11 [28%] of 39), headache (three [8%] of 38), haemoptysis (two [5%] of 39), and diarrhoea (one [3%] of 38). Dyspnoea developed in 22 (55%) of 40 patients (median time from illness onset to dyspnoea 8·0 days [IQR 5·0–13·0]). 26 (63%) of 41 patients had lymphopenia. All 41 patients had pneumonia with abnormal findings on chest CT. Complications included acute respiratory distress syndrome (12 [29%]), RNAemia (six [15%]), acute cardiac injury (five [12%]) and secondary infection (four [10%]). 13 (32%) patients were admitted to an ICU and six (15%) died. Compared with non-ICU patients, ICU patients had higher plasma levels of IL2, IL7, IL10, GSCF, IP10, MCP1, MIP1A, and TNFα.

**Interpretation** The 2019-nCoV infection caused clusters of severe respiratory illness similar to severe acute respiratory syndrome coronavirus and was associated with ICU admission and high mortality. Major gaps in our knowledge of the origin, epidemiology, duration of human transmission, and clinical spectrum of disease need fulfilment by future studies.

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## Introduction

Coronaviruses are enveloped non-segmented positive-sense RNA viruses belonging to the family Coronaviridae and the order Nidovirales and broadly distributed in humans and other mammals.<sup>1</sup> Although most human coronavirus infections are mild, the epidemics of the two betacoronaviruses, severe acute respiratory syndrome coronavirus (SARS-CoV)<sup>2–4</sup> and Middle East respiratory syndrome coronavirus (MERS-CoV),<sup>5,6</sup> have caused more than 10 000 cumulative cases in the past two decades, with mortality rates of 10% for SARS-CoV and 37% for MERS-CoV.<sup>7,8</sup> The coronaviruses already identified might only be the tip of the iceberg, with

potentially more novel and severe zoonotic events to be revealed.

In December, 2019, a series of pneumonia cases of unknown cause emerged in Wuhan, Hubei, China, with clinical presentations greatly resembling viral pneumonia.<sup>9</sup> Deep sequencing analysis from lower respiratory tract samples indicated a novel coronavirus, which was named 2019 novel coronavirus (2019-nCoV). Thus far, more than 800 confirmed cases, including in health-care workers, have been identified in Wuhan, and several exported cases have been confirmed in other provinces in China, and in Thailand, Japan, South Korea, and the USA.<sup>10–13</sup>

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## Research in context

### Evidence before this study

Human coronaviruses, including hCoV-229E, OC43, NL63, and HKU1, cause mild respiratory diseases. Fatal coronavirus infections that have emerged in the past two decades are severe acute respiratory syndrome coronavirus (SARS-CoV) and the Middle East respiratory syndrome coronavirus. We searched PubMed and the China National Knowledge Infrastructure database for articles published up to Jan 11, 2020, using the keywords "novel coronavirus", "2019 novel coronavirus", or "2019-nCoV". No published work about the human infection caused by the 2019 novel coronavirus (2019-nCoV) could be identified.

### Added value of this study

We report the epidemiological, clinical, laboratory, and radiological characteristics, treatment, and clinical outcomes of 41 laboratory-confirmed cases infected with 2019-nCoV.

27 (66%) of 41 patients had a history of direct exposure to the Huanan seafood market. The median age of patients was 49.0 years (IQR 41.0–58.0), and 13 (32%) patients had underlying disease. All patients had pneumonia. A third of patients were admitted to intensive care units, and six died. High concentrations of cytokines were recorded in plasma of critically ill patients infected with 2019-nCoV.

### Implications of all the available evidence

2019-nCoV caused clusters of fatal pneumonia with clinical presentation greatly resembling SARS-CoV. Patients infected with 2019-nCoV might develop acute respiratory distress syndrome, have a high likelihood of admission to intensive care, and might die. The cytokine storm could be associated with disease severity. More efforts should be made to know the whole spectrum and pathophysiology of the new disease.

We aim to describe epidemiological, clinical, laboratory, and radiological characteristics, treatment, and outcomes of patients confirmed to have 2019-nCoV infection, and to compare the clinical features between intensive care unit (ICU) and non-ICU patients. We hope our study findings will inform the global community of the emergence of this novel coronavirus and its clinical features.

## Methods

### Patients

Following the pneumonia cases of unknown cause reported in Wuhan and considering the shared history of exposure to Huanan seafood market across the patients, an epidemiological alert was released by the local health authority on Dec 31, 2019, and the market was shut down on Jan 1, 2020. Meanwhile, 59 suspected cases with fever and dry cough were transferred to a designated hospital starting from Dec 31, 2019. An expert team of physicians, epidemiologists, virologists, and government officials was soon formed after the alert.

Since the cause was unknown at the onset of these emerging infections, the diagnosis of pneumonia of unknown cause in Wuhan was based on clinical characteristics, chest imaging, and the ruling out of common bacterial and viral pathogens that cause pneumonia. Suspected patients were isolated using airborne precautions in the designated hospital, Jin Yin-tan Hospital (Wuhan, China), and fit-tested N95 masks and airborne precautions for aerosol-generating procedures were taken. This study was approved by the National Health Commission of China and Ethics Commission of Jin Yin-tan Hospital (KY-2020-01.01). Written informed consent was waived by the Ethics Commission of the designated hospital for emerging infectious diseases.

### Procedures

Local centres for disease control and prevention collected respiratory, blood, and faeces specimens, then shipped them to designated authoritative laboratories to detect the pathogen (NHC Key Laboratory of Systems Biology of Pathogens and Christophe Merieux Laboratory, Beijing, China). A novel coronavirus, which was named 2019-nCoV, was isolated then from lower respiratory tract specimen and a diagnostic test for this virus was developed soon after that.<sup>14</sup> Of 59 suspected cases, 41 patients were confirmed to be infected with 2019-nCoV. The presence of 2019-nCoV in respiratory specimens was detected by next-generation sequencing or real-time RT-PCR methods. The primers and probe target to envelope gene of CoV were used and the sequences were as follows: forward primer 5'-ACTTCTTTTCTTCTTTCGTGGT-3'; reverse primer 5'-GCAGCAGTACGCACACAATC-3'; and the probe 5'-CY5-CTAGTTACTAGCCATCCTTACTGC-3'/BHQ1. Conditions for the amplifications were 50°C for 15 min, 95°C for 3 min, followed by 45 cycles of 95°C for 15 s and 60°C for 30 s.

Initial investigations included a complete blood count, coagulation profile, and serum biochemical test (including renal and liver function, creatine kinase, lactate dehydrogenase, and electrolytes). Respiratory specimens, including nasal and pharyngeal swabs, bronchoalveolar lavage fluid, sputum, or bronchial aspirates were tested for common viruses, including influenza, avian influenza, respiratory syncytial virus, adenovirus, parainfluenza virus, SARS-CoV and MERS-CoV using real-time RT-PCR assays approved by the China Food and Drug Administration. Routine bacterial and fungal examinations were also performed.

Given the emergence of the 2019-nCoV pneumonia cases during the influenza season, antibiotics (orally and intravenously) and oseltamivir (orally 75 mg twice daily) were empirically administered. Corticosteroid therapy

(methylprednisolone 40–120 mg per day) was given as a combined regimen if severe community-acquired pneumonia was diagnosed by physicians at the designated hospital. Oxygen support (eg, nasal cannula and invasive mechanical ventilation) was administered to patients according to the severity of hypoxaemia. Repeated tests for 2019-nCoV were done in patients confirmed to have 2019-nCoV infection to show viral clearance before hospital discharge or discontinuation of isolation.

### Data collection

We reviewed clinical charts, nursing records, laboratory findings, and chest x-rays for all patients with laboratory-confirmed 2019-nCoV infection who were reported by the local health authority. The admission data of these patients was from Dec 16, 2019, to Jan 2, 2020. Epidemiological, clinical, laboratory, and radiological characteristics and treatment and outcomes data were obtained with standardised data collection forms (modified case record form for severe acute respiratory infection clinical characterisation shared by WHO and the International Severe Acute Respiratory and Emerging Infection Consortium) from electronic medical records. Two researchers also independently reviewed the data collection forms to double check the data collected. To ascertain the epidemiological and symptom data, which were not available from electronic medical records, the researchers also directly communicated with patients or their families to ascertain epidemiological and symptom data.

### Cytokine and chemokine measurement

To characterise the effect of coronavirus on the production of cytokines or chemokines in the acute phase of the illness, plasma cytokines and chemokines (IL1B, IL1RA, IL2, IL4, IL5, IL6, IL7, IL8 (also known as CXCL8), IL9, IL10, IL12p70, IL13, IL15, IL17A, Eotaxin (also known as CCL11), basic FGF2, GCSF (CSF3), GMCSF (CSF2), IFN $\gamma$ , IP10 (CXCL10), MCP1 (CCL2), MIP1A (CCL3), MIP1B (CCL4), PDGFB, RANTES (CCL5), TNF $\alpha$ , and VEGFA were measured using Human Cytokine Standard 27-Plex Assays panel and the Bio-Plex 200 system (Bio-Rad, Hercules, CA, USA) for all patients according to the manufacturer's instructions. The plasma samples from four healthy adults were used as controls for cross-comparison. The median time from being transferred to a designated hospital to the blood sample collection was 4 days (IQR 2–5).

### Detection of coronavirus in plasma

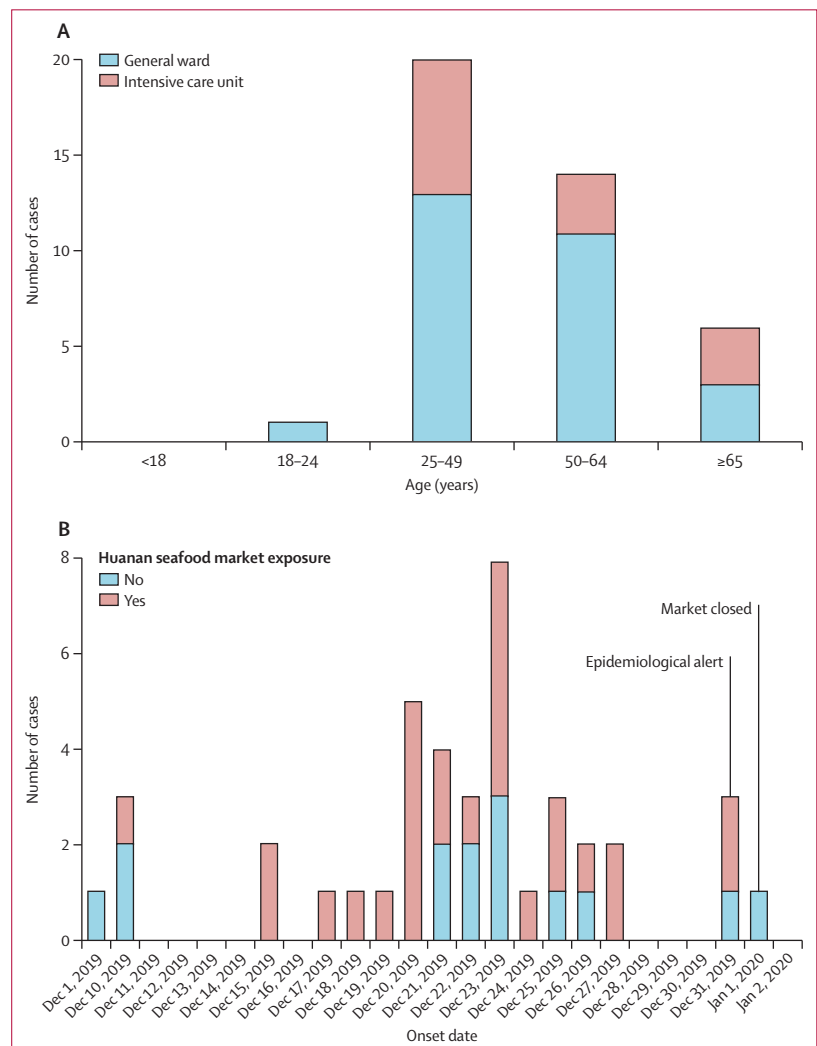
Each 80  $\mu$ L plasma sample from the patients and contacts was added into 240  $\mu$ L of Trizol LS (10296028; Thermo Fisher Scientific, Carlsbad, CA, USA) in the Biosafety Level 3 laboratory. Total RNA was extracted by Direct-zol RNA Miniprep kit (R2050; Zymo research, Irvine, CA, USA) according to the manufacturer's instructions and

50  $\mu$ L elution was obtained for each sample. 5  $\mu$ L RNA was used for real-time RT-PCR, which targeted the NP gene using AgPath-ID One-Step RT-PCR Reagent (AM1005; Thermo Fisher Scientific). The final reaction mix concentration of the primers was 500 nM and probe was 200 nM. Real-time RT-PCR was performed using the following conditions: 50°C for 15 min and 95°C for 3 min, 50 cycles of amplification at 95°C for 10 s and 60°C for 45 s. Since we did not perform tests for detecting infectious virus in blood, we avoided the term viraemia and used RNAemia instead. RNAemia was defined as a positive result for real-time RT-PCR in the plasma sample.

### Definitions

Acute respiratory distress syndrome (ARDS) and shock were defined according to the interim guidance of WHO

For the International Severe Acute Respiratory and Emerging Infection Consortium–WHO case record form for severe acute respiratory infections see <https://isaric.tghn.org/protocols/severe-acute-respiratory-infection-data-tools/>



**Figure 1: Date of illness onset and age distribution of patients with laboratory-confirmed 2019-nCoV infection**

(A) Number of hospital admissions by age group. (B) Distribution of symptom onset date for laboratory-confirmed cases. The Wuhan local health authority issued an epidemiological alert on Dec 30, 2019, and closed the Huanan seafood market 2 days later.

	All patients (n=41)	ICU care (n=13)	No ICU care (n=28)	p value
<b>Characteristics</b>				
Age, years	49·0 (41·0–58·0)	49·0 (41·0–61·0)	49·0 (41·0–57·5)	0·60
Sex	..	..	..	0·24
Men	30 (73%)	11 (85%)	19 (68%)	..
Women	11 (27%)	2 (15%)	9 (32%)	..
Huanan seafood market exposure	27 (66%)	9 (69%)	18 (64%)	0·75
Current smoking	3 (7%)	0	3 (11%)	0·31
Any comorbidity	13 (32%)	5 (38%)	8 (29%)	0·53
Diabetes	8 (20%)	1 (8%)	7 (25%)	0·16
Hypertension	6 (15%)	2 (15%)	4 (14%)	0·93
Cardiovascular disease	6 (15%)	3 (23%)	3 (11%)	0·32
Chronic obstructive pulmonary disease	1 (2%)	1 (8%)	0	0·14
Malignancy	1 (2%)	0	1 (4%)	0·49
Chronic liver disease	1 (2%)	0	1 (4%)	0·68
<b>Signs and symptoms</b>				
Fever	40 (98%)	13 (100%)	27 (96%)	0·68
Highest temperature, °C	..	..	..	0·037
<37·3	1 (2%)	0	1 (4%)	..
37·3–38·0	8 (20%)	3 (23%)	5 (18%)	..
38·1–39·0	18 (44%)	7 (54%)	11 (39%)	..
>39·0	14 (34%)	3 (23%)	11 (39%)	..
Cough	31 (76%)	11 (85%)	20 (71%)	0·35
Myalgia or fatigue	18 (44%)	7 (54%)	11 (39%)	0·38
Sputum production	11/39 (28%)	5 (38%)	6/26 (23%)	0·32
Headache	3/38 (8%)	0	3/25 (12%)	0·10
Haemoptysis	2/39 (5%)	1 (8%)	1/26 (4%)	0·46
Diarrhoea	1/38 (3%)	0	1/25 (4%)	0·66
Dyspnoea	22/40 (55%)	12 (92%)	10/27 (37%)	0·0010
Days from illness onset to dyspnoea	8·0 (5·0–13·0)	8·0 (6·0–17·0)	6·5 (2·0–10·0)	0·22
Days from first admission to transfer	5·0 (1·0–8·0)	8·0 (5·0–14·0)	1·0 (1·0–6·5)	0·0023
Systolic pressure, mm Hg	125·0 (119·0–135·0)	145·0 (123·0–167·0)	122·0 (118·5–129·5)	0·018
Respiratory rate >24 breaths per min	12 (29%)	8 (62%)	4 (14%)	0·0023

Data are median (IQR), n (%), or n/N (%), where N is the total number of patients with available data. p values comparing ICU care and no ICU care are from  $\chi^2$  test, Fisher's exact test, or Mann-Whitney U test. 2019-nCoV=2019 novel coronavirus. ICU=intensive care unit.

**Table 1: Demographics and baseline characteristics of patients infected with 2019-nCoV**

for novel coronavirus.<sup>9</sup> Hypoxaemia was defined as arterial oxygen tension (PaO<sub>2</sub>) over inspiratory oxygen fraction (FIO<sub>2</sub>) of less than 300 mm Hg.<sup>15</sup> Acute kidney injury was identified and classified on the basis of the highest serum creatinine level or urine output criteria according to the kidney disease improving global outcomes classification.<sup>16</sup> Secondary infection was diagnosed if the patients had clinical symptoms or signs of nosocomial pneumonia or bacteraemia, and was combined with a positive culture of a new pathogen from a lower respiratory tract specimen (including the sputum, transtracheal aspirates, or bronchoalveolar lavage fluid, or from blood samples taken  $\geq$ 48 h

after admission).<sup>17</sup> Cardiac injury followed the definition used in our previous study in H7N9 patients.<sup>18</sup> In brief, cardiac injury was diagnosed if serum levels of cardiac biomarkers (eg, troponin I) were above the 99th percentile upper reference limit, or new abnormalities were shown in electrocardiography and echocardiography.

### Statistical analysis

Continuous variables were expressed as median (IQR) and compared with the Mann-Whitney U test; categorical variables were expressed as number (%) and compared by  $\chi^2$  test or Fisher's exact test between ICU care and no ICU care groups. Boxplots were drawn to describe plasma cytokine and chemokine concentrations.

A two-sided  $\alpha$  of less than 0·05 was considered statistically significant. Statistical analyses were done using the SAS software, version 9·4, unless otherwise indicated.

### Role of the funding source

The funder of the study had no role in study design, data collection, data analysis, data interpretation, or writing of the report. The corresponding authors had full access to all the data in the study and had final responsibility for the decision to submit for publication.

### Results

By Jan 2, 2020, 41 admitted hospital patients were identified as laboratory-confirmed 2019-nCoV infection in Wuhan. 20 [49%] of the 2019-nCoV-infected patients were aged 25–49 years, and 14 (34%) were aged 50–64 years (figure 1A). The median age of the patients was 49·0 years (IQR 41·0–58·0; table 1). In our cohort of the first 41 patients as of Jan 2, no children or adolescents were infected. Of the 41 patients, 13 (32%) were admitted to the ICU because they required high-flow nasal cannula or higher-level oxygen support measures to correct hypoxaemia. Most of the infected patients were men (30 [73%]); less than half had underlying diseases (13 [32%]), including diabetes (eight [20%]), hypertension (six [15%]), and cardiovascular disease (six [15%]).

27 (66%) patients had direct exposure to Huanan seafood market (figure 1B). Market exposure was similar between the patients with ICU care (nine [69%]) and those with non-ICU care (18 [64%]). The symptom onset date of the first patient identified was Dec 1, 2019. None of his family members developed fever or any respiratory symptoms. No epidemiological link was found between the first patient and later cases. The first fatal case, who had continuous exposure to the market, was admitted to hospital because of a 7-day history of fever, cough, and dyspnoea. 5 days after illness onset, his wife, a 53-year-old woman who had no known history of exposure to the market, also presented with pneumonia and was hospitalised in the isolation ward.

The most common symptoms at onset of illness were fever (40 [98%] of 41 patients), cough (31 [76%]), and myalgia or fatigue (18 [44%]); less common symptoms



were sputum production (11 [28%] of 39), headache (three [8%] of 38), haemoptysis (two [5%] of 39), and diarrhoea (one [3%] of 38; table 1). More than half of patients (22 [55%] of 40) developed dyspnoea. The median duration from illness onset to dyspnoea was 8·0 days (IQR 5·0–13·0). The median time from onset of symptoms to first hospital admission was 7·0 days (4·0–8·0), to shortness of breath was 8·0 days (5·0–13·0), to ARDS was 9·0 days (8·0–14·0), to mechanical ventilation was 10·5 days (7·0–14·0), and to ICU admission was 10·5 days (8·0–17·0; figure 2).

The blood counts of patients on admission showed leucopenia (white blood cell count less than  $4 \times 10^9/L$ ; ten [25%] of 40 patients) and lymphopenia (lymphocyte count  $<1 \times 10^9/L$ ; 26 [63%] patients; table 2). Prothrombin time and D-dimer level on admission were higher in ICU patients (median prothrombin time 12·2 s [IQR 11·2–13·4]; median D-dimer level 2·4 mg/L [0·6–14·4]) than non-ICU patients (median prothrombin time 10·7 s [9·8–12·1],  $p=0\cdot012$ ; median D-dimer level 0·5 mg/L [0·3–0·8],  $p=0\cdot0042$ ). Levels of aspartate aminotransferase were increased in 15 (37%) of 41 patients, including eight (62%) of 13 ICU patients and seven (25%) of 28 non-ICU patients. Hypersensitive troponin I (hs-cTnI) was increased substantially in five patients, in whom the diagnosis of virus-related cardiac injury was made.

Most patients had normal serum levels of procalcitonin on admission (procalcitonin  $<0\cdot1$  ng/mL; 27 [69%] patients; table 2). Four ICU patients developed secondary infections. Three of the four patients with secondary infection had procalcitonin greater than 0·5 ng/mL (0·69 ng/mL, 1·46 ng/mL, and 6·48 ng/mL).

On admission, abnormalities in chest CT images were detected among all patients. Of the 41 patients, 40 (98%) had bilateral involvement (table 2). The typical findings of chest CT images of ICU patients on admission were bilateral multiple lobular and subsegmental areas of consolidation (figure 3A). The representative chest CT findings of non-ICU patients showed bilateral ground-glass opacity and subsegmental areas of consolidation (figure 3B). Later chest CT images showed bilateral ground-glass opacity, whereas the consolidation had been resolved (figure 3C).

Initial plasma IL1B, IL1RA, IL7, IL8, IL9, IL10, basic FGF, GCSF, GM-CSF, IFN $\gamma$ , IP10, MCP1, MIP1A, MIP1B, PDGF, TNF $\alpha$ , and VEGF concentrations were higher in both ICU patients and non-ICU patients than in healthy adults (appendix pp 6–7). Plasma levels of IL5, IL12p70, IL15, Eotaxin, and RANTES were similar between healthy adults and patients infected with 2019-nCoV. Further comparison between ICU and non-ICU patients showed that plasma concentrations of IL2, IL7, IL10, GCSF, IP10, MCP1, MIP1A, and TNF $\alpha$  were higher in ICU patients than non-ICU patients.

All patients had pneumonia. Common complications included ARDS (12 [29%] of 41 patients), followed by

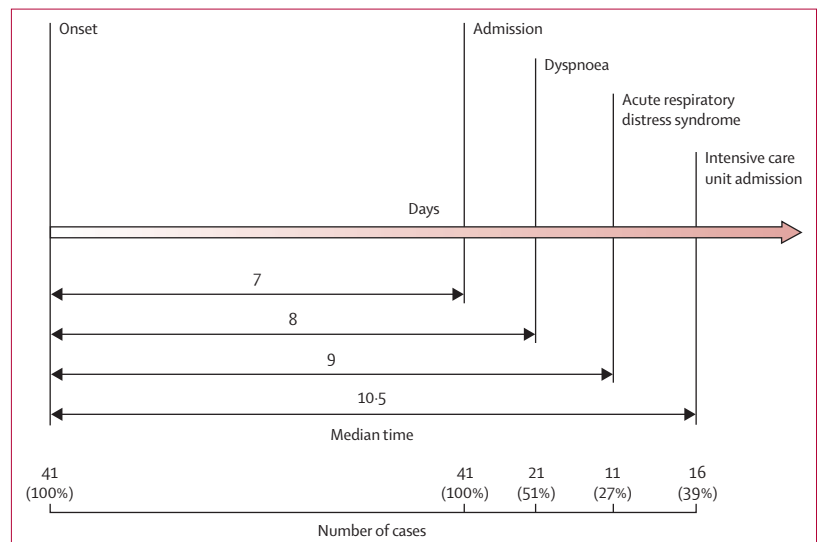


Figure 2: Timeline of 2019-nCoV cases after onset of illness

RNAemia (six [15%] patients), acute cardiac injury (five [12%] patients), and secondary infection (four [10%] patients; table 3). Invasive mechanical ventilation was required in four (10%) patients, with two of them (5%) had refractory hypoxaemia and received extracorporeal membrane oxygenation as salvage therapy. All patients were administered with empirical antibiotic treatment, and 38 (93%) patients received antiviral therapy (oseltamivir). Additionally, nine (22%) patients were given systematic corticosteroids. A comparison of clinical features between patients who received and did not receive systematic corticosteroids is in the appendix (pp 1–5).

As of Jan 22, 2020, 28 (68%) of 41 patients have been discharged and six (15%) patients have died. Fitness for discharge was based on abatement of fever for at least 10 days, with improvement of chest radiographic evidence and viral clearance in respiratory samples from upper respiratory tract.

## Discussion

We report here a cohort of 41 patients with laboratory-confirmed 2019-nCoV infection. Patients had serious, sometimes fatal, pneumonia and were admitted to the designated hospital in Wuhan, China, by Jan 2, 2020. Clinical presentations greatly resemble SARS-CoV. Patients with severe illness developed ARDS and required ICU admission and oxygen therapy. The time between hospital admission and ARDS was as short as 2 days. At this stage, the mortality rate is high for 2019-nCoV, because six (15%) of 41 patients in this cohort died.

The number of deaths is rising quickly. As of Jan 24, 2020, 835 laboratory-confirmed 2019-nCoV infections were reported in China, with 25 fatal cases. Reports have been released of exported cases in many provinces in China, and in other countries;

See Online for appendix



## Articles

	All patients (n=41)	ICU care (n=13)	No ICU care (n=28)	p value
White blood cell count, $\times 10^9$ per L	6.2 (4.1–10.5)	11.3 (5.8–12.1)	5.7 (3.1–7.6)	0.011
<4	10/40 (25%)	1/13 (8%)	9/27 (33%)	0.041
4–10	18/40 (45%)	5/13 (38%)	13/27 (48%)	..
>10	12/40 (30%)	7/13 (54%)	5/27 (19%)	..
Neutrophil count, $\times 10^9$ per L	5.0 (3.3–8.9)	10.6 (5.0–11.8)	4.4 (2.0–6.1)	0.00069
Lymphocyte count, $\times 10^9$ per L	0.8 (0.6–1.1)	0.4 (0.2–0.8)	1.0 (0.7–1.1)	0.0041
<1.0	26/41 (63%)	11/13 (85%)	15/28 (54%)	0.045
$\geq 1.0$	15/41 (37%)	2/13 (15%)	13/28 (46%)	..
Haemoglobin, g/L	126.0 (118.0–140.0)	122.0 (111.0–128.0)	130.5 (120.0–140.0)	0.20
Platelet count, $\times 10^9$ per L	164.5 (131.5–263.0)	196.0 (165.0–263.0)	149.0 (131.0–263.0)	0.45
<100	2/40 (5%)	1/13 (8%)	1/27 (4%)	0.45
$\geq 100$	38/40 (95%)	12/13 (92%)	26/27 (96%)	..
Prothrombin time, s	11.1 (10.1–12.4)	12.2 (11.2–13.4)	10.7 (9.8–12.1)	0.012
Activated partial thromboplastin time, s	27.0 (24.2–34.1)	26.2 (22.5–33.9)	27.7 (24.8–34.1)	0.57
D-dimer, mg/L	0.5 (0.3–1.3)	2.4 (0.6–14.4)	0.5 (0.3–0.8)	0.0042
Albumin, g/L	31.4 (28.9–36.0)	27.9 (26.3–30.9)	34.7 (30.2–36.5)	0.00066
Alanine aminotransferase, U/L	32.0 (21.0–50.0)	49.0 (29.0–115.0)	27.0 (19.5–40.0)	0.038
Aspartate aminotransferase, U/L	34.0 (26.0–48.0)	44.0 (30.0–70.0)	34.0 (24.0–40.5)	0.10
$\leq 40$	26/41 (63%)	5/13 (38%)	21/28 (75%)	0.025
>40	15/41 (37%)	8/13 (62%)	7/28 (25%)	..
Total bilirubin, mmol/L	11.7 (9.5–13.9)	14.0 (11.9–32.9)	10.8 (9.4–12.3)	0.011
Potassium, mmol/L	4.2 (3.8–4.8)	4.6 (4.0–5.0)	4.1 (3.8–4.6)	0.27
Sodium, mmol/L	139.0 (137.0–140.0)	138.0 (137.0–139.0)	139.0 (137.5–140.5)	0.26
Creatinine, $\mu\text{mol/L}$	74.2 (57.5–85.7)	79.0 (53.1–92.7)	73.3 (57.5–84.7)	0.84
$\leq 133$	37/41 (90%)	11/13 (85%)	26/28 (93%)	0.42
>133	4/41 (10%)	2/13 (15%)	2/28 (7%)	..
Creatine kinase, U/L	132.5 (62.0–219.0)	132.0 (82.0–493.0)	133.0 (61.0–189.0)	0.31
$\leq 185$	27/40 (68%)	7/13 (54%)	20/27 (74%)	0.21
>185	13/40 (33%)	6/13 (46%)	7/27 (26%)	..
Lactate dehydrogenase, U/L	286.0 (242.0–408.0)	400.0 (323.0–578.0)	281.0 (233.0–357.0)	0.0044
$\leq 245$	11/40 (28%)	1/13 (8%)	10/27 (37%)	0.036
>245	29/40 (73%)	12/13 (92%)	17/27 (63%)	..
Hypersensitive troponin I, pg/mL	3.4 (1.1–9.1)	3.3 (3.0–163.0)	3.5 (0.7–5.4)	0.075
>28 (99th percentile)	5/41 (12%)	4/13 (31%)	1/28 (4%)	0.017
Procalcitonin, ng/mL	0.1 (0.1–0.1)	0.1 (0.1–0.4)	0.1 (0.1–0.1)	0.031
<0.1	27/39 (69%)	6/12 (50%)	21/27 (78%)	0.029
$\geq 0.1$ to <0.25	7/39 (18%)	3/12 (25%)	4/27 (15%)	..
$\geq 0.25$ to <0.5	2/39 (5%)	0/12	2/27 (7%)	..
$\geq 0.5$	3/39 (8%)	3/12 (25%)*	0/27	..
Bilateral involvement of chest radiographs	40/41 (98%)	13/13 (100%)	27/28 (96%)	0.68
Cycle threshold of respiratory tract	32.2 (31.0–34.5)	31.1 (30.0–33.5)	32.2 (31.1–34.7)	0.39

Data are median (IQR) or n/N (%), where N is the total number of patients with available data. p values comparing ICU care and no ICU care are from  $\chi^2$ , Fisher's exact test, or Mann-Whitney U test. 2019-nCoV=2019 novel coronavirus. ICU=intensive care unit. \*Complicated typical secondary infection during the first hospitalisation.

**Table 2: Laboratory findings of patients infected with 2019-nCoV on admission to hospital**

some health-care workers have also been infected in Wuhan. Taken together, evidence so far indicates human transmission for 2019-nCoV. We are concerned that 2019-nCoV could have acquired the ability for efficient human transmission.<sup>19</sup> Airborne precautions, such as a fit-tested N95 respirator, and other personal protective equipment are strongly recommended. To

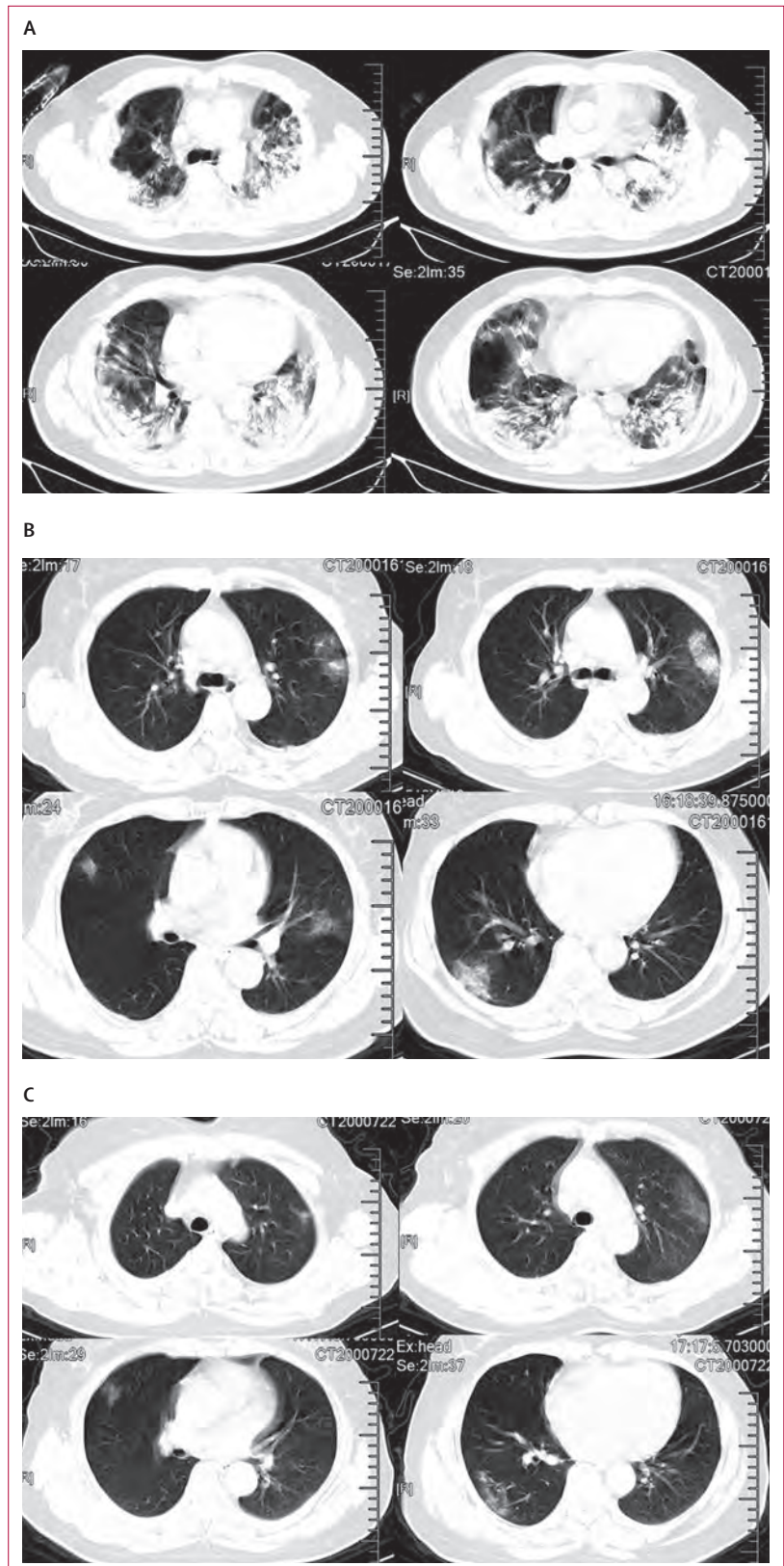
prevent further spread of the disease in health-care settings that are caring for patients infected with 2019-nCoV, onset of fever and respiratory symptoms should be closely monitored among health-care workers. Testing of respiratory specimens should be done immediately once a diagnosis is suspected. Serum antibodies should be tested among health-care workers

before and after their exposure to 2019-nCoV for identification of asymptomatic infections.

Similarities of clinical features between 2019-nCoV and previous betacoronavirus infections have been noted. In this cohort, most patients presented with fever, dry cough, dyspnoea, and bilateral ground-glass opacities on chest CT scans. These features of 2019-nCoV infection bear some resemblance to SARS-CoV and MERS-CoV infections.<sup>20,21</sup> However, few patients with 2019-nCoV infection had prominent upper respiratory tract signs and symptoms (eg, rhinorrhoea, sneezing, or sore throat), indicating that the target cells might be located in the lower airway. Furthermore, 2019-nCoV patients rarely developed intestinal signs and symptoms (eg, diarrhoea), whereas about 20–25% of patients with MERS-CoV or SARS-CoV infection had diarrhoea.<sup>21</sup> Faecal and urine samples should be tested to exclude a potential alternative route of transmission that is unknown at this stage.

The pathophysiology of unusually high pathogenicity for SARS-CoV or MERS-CoV has not been completely understood. Early studies have shown that increased amounts of proinflammatory cytokines in serum (eg, IL1B, IL6, IL12, IFN $\gamma$ , IP10, and MCP1) were associated with pulmonary inflammation and extensive lung damage in SARS patients.<sup>22</sup> MERS-CoV infection was also reported to induce increased concentrations of proinflammatory cytokines (IFN $\gamma$ , TNF $\alpha$ , IL15, and IL17).<sup>23</sup> We noted that patients infected with 2019-nCoV also had high amounts of IL1B, IFN $\gamma$ , IP10, and MCP1, probably leading to activated T-helper-1 (Th1) cell responses. Moreover, patients requiring ICU admission had higher concentrations of GCSF, IP10, MCP1, MIP1A, and TNF $\alpha$  than did those not requiring ICU admission, suggesting that the cytokine storm was associated with disease severity. However, 2019-nCoV infection also initiated increased secretion of T-helper-2 (Th2) cytokines (eg, IL4 and IL10) that suppress inflammation, which differs from SARS-CoV infection.<sup>22</sup> Further studies are necessary to characterise the Th1 and Th2 responses in 2019-nCoV infection and to elucidate the pathogenesis. Autopsy or biopsy studies would be the key to understand the disease.

In view of the high amount of cytokines induced by SARS-CoV,<sup>22,24</sup> MERS-CoV,<sup>25,26</sup> and 2019-nCoV infections, corticosteroids were used frequently for treatment of patients with severe illness, for possible benefit by reducing inflammatory-induced lung injury. However, current evidence in patients with SARS and MERS



**Figure 3: Chest CT images**

(A) Transverse chest CT images from a 40-year-old man showing bilateral multiple lobular and subsegmental areas of consolidation on day 15 after symptom onset. Transverse chest CT images from a 53-year-old woman showing bilateral ground-glass opacity and subsegmental areas of consolidation on day 8 after symptom onset (B), and bilateral ground-glass opacity on day 12 after symptom onset (C).

	All patients (n=41)	ICU care (n=13)	No ICU care (n=28)	p value
Duration from illness onset to first admission	7.0 (4.0–8.0)	7.0 (4.0–8.0)	7.0 (4.0–8.5)	0.87
<b>Complications</b>				
Acute respiratory distress syndrome	12 (29%)	11 (85%)	1 (4%)	<0.0001
RNAemia	6 (15%)	2 (15%)	4 (14%)	0.93
Cycle threshold of RNAemia	35.1 (34.7–35.1)	35.1 (35.1–35.1)	34.8 (34.1–35.4)	0.35
Acute cardiac injury*	5 (12%)	4 (31%)	1 (4%)	0.017
Acute kidney injury	3 (7%)	3 (23%)	0	0.027
Secondary infection	4 (10%)	4 (31%)	0	0.0014
Shock	3 (7%)	3 (23%)	0	0.027
<b>Treatment</b>				
Antiviral therapy	38 (93%)	12 (92%)	26 (93%)	0.46
Antibiotic therapy	41 (100%)	13 (100%)	28 (100%)	NA
Use of corticosteroid	9 (22%)	6 (46%)	3 (11%)	0.013
Continuous renal replacement therapy	3 (7%)	3 (23%)	0	0.027
Oxygen support	..	..	..	<0.0001
Nasal cannula	27 (66%)	1 (8%)	26 (93%)	..
Non-invasive ventilation or high-flow nasal cannula	10 (24%)	8 (62%)	2 (7%)	..
Invasive mechanical ventilation	2 (5%)	2 (15%)	0	..
Invasive mechanical ventilation and ECMO	2 (5%)	2 (15%)	0	..
<b>Prognosis</b>				
Hospitalisation	7 (17%)	1 (8%)	6 (21%)	..
Discharge	28 (68%)	7 (54%)	21 (75%)	..
Death	6 (15%)	5 (38%)	1 (4%)	..

Data are median (IQR) or n (%). p values are comparing ICU care and no ICU care. 2019-nCoV=2019 novel coronavirus. ICU=intensive care unit. NA=not applicable. ECMO=extracorporeal membrane oxygenation. \*Defined as blood levels of hypersensitive troponin I above the 99th percentile upper reference limit (>28 pg/mL) or new abnormalities shown on electrocardiography and echocardiography.

**Table 3: Treatments and outcomes of patients infected with 2019-nCoV**

suggests that receiving corticosteroids did not have an effect on mortality, but rather delayed viral clearance.<sup>27–29</sup> Therefore, corticosteroids should not be routinely given systemically, according to WHO interim guidance.<sup>30</sup> Among our cohort of 41 laboratory-confirmed patients with 2019-nCoV infection, corticosteroids were given to very few non-ICU cases, and low-to-moderate dose of corticosteroids were given to less than half of severely ill patients with ARDS. Further evidence is urgently needed to assess whether systematic corticosteroid treatment is beneficial or harmful for patients infected with 2019-nCoV.

No antiviral treatment for coronavirus infection has been proven to be effective. In a historical control study,<sup>31</sup> the combination of lopinavir and ritonavir among SARS-CoV patients was associated with substantial clinical benefit (fewer adverse clinical outcomes). Arabi and colleagues initiated a placebo-controlled trial of interferon beta-1b, lopinavir, and ritonavir among patients with MERS infection in Saudi Arabia.<sup>32</sup> Preclinical evidence showed

the potent efficacy of remdesivir (a broad-spectrum antiviral nucleotide prodrug) to treat MERS-CoV and SARS-CoV infections.<sup>33,34</sup> As 2019-nCoV is an emerging virus, an effective treatment has not been developed for disease resulting from this virus. Since the combination of lopinavir and ritonavir was already available in the designated hospital, a randomised controlled trial has been initiated quickly to assess the efficacy and safety of combined use of lopinavir and ritonavir in patients hospitalised with 2019-nCoV infection.

Our study has some limitations. First, for most of the 41 patients, the diagnosis was confirmed with lower respiratory tract specimens and no paired nasopharyngeal swabs were obtained to investigate the difference in the viral RNA detection rate between upper and lower respiratory tract specimens. Serological detection was not done to look for 2019-nCoV antibody rises in 18 patients with undetectable viral RNA. Second, with the limited number of cases, it is difficult to assess host risk factors for disease severity and mortality with multivariable-adjusted methods. This is a modest-sized case series of patients admitted to hospital; collection of standardised data for a larger cohort would help to further define the clinical presentation, natural history, and risk factors. Further studies in outpatient, primary care, or community settings are needed to get a full picture of the spectrum of clinical severity. At the same time, finding of statistical tests and p values should be interpreted with caution, and non-significant p values do not necessarily rule out difference between ICU and non-ICU patients. Third, since the causative pathogen has just been identified, kinetics of viral load and antibody titres were not available. Finally, the potential exposure bias in our study might account for why no paediatric or adolescent patients were reported in this cohort. More effort should be made to answer these questions in future studies.

Both SARS-CoV and MERS-CoV were believed to originate in bats, and these infections were transmitted directly to humans from market civets and dromedary camels, respectively.<sup>35</sup> Extensive research on SARS-CoV and MERS-CoV has driven the discovery of many SARS-like and MERS-like coronaviruses in bats. In 2013, Ge and colleagues<sup>36</sup> reported the whole genome sequence of a SARS-like coronavirus in bats with that ability to use human ACE2 as a receptor, thus having replication potentials in human cells.<sup>37</sup> 2019-nCoV still needs to be studied deeply in case it becomes a global health threat. Reliable quick pathogen tests and feasible differential diagnosis based on clinical description are crucial for clinicians in their first contact with suspected patients. Because of the pandemic potential of 2019-nCoV, careful surveillance is essential to monitor its future host adaption, viral evolution, infectivity, transmissibility, and pathogenicity.

#### Contributors

BC and JW had the idea for and designed the study and had full access to all data in the study and take responsibility for the integrity of the



data and the accuracy of the data analysis. YWa, GF, XG, JiXu, HL, and BC contributed to writing of the report. BC contributed to critical revision of the report. YWa, GF, XG, JiXu, and HL contributed to the statistical analysis. All authors contributed to data acquisition, data analysis, or data interpretation, and reviewed and approved the final version.

#### Declaration of interests

All authors declare no competing interests.

#### Data sharing

The data that support the findings of this study are available from the corresponding author on reasonable request. Participant data without names and identifiers will be made available after approval from the corresponding author and National Health Commission. After publication of study findings, the data will be available for others to request. The research team will provide an email address for communication once the data are approved to be shared with others. The proposal with detailed description of study objectives and statistical analysis plan will be needed for evaluation of the reasonability to request for our data. The corresponding author and National Health Commission will make a decision based on these materials. Additional materials may also be required during the process.

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# Exhibit

## 24



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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## Preventive Medicine

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## Review Article

## Contributing factors to personal protective equipment shortages during the COVID-19 pandemic

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 Shortage  
 Public good

## ABSTRACT

This study investigates the forces that contributed to severe shortages in personal protective equipment in the US during the COVID-19 crisis. Problems from a dysfunctional costing model in hospital operating systems were magnified by a very large demand shock triggered by acute need in healthcare and panicked marketplace behavior that depleted domestic PPE inventories. The lack of effective action on the part of the federal government to maintain and distribute domestic inventories, as well as severe disruptions to the PPE global supply chain, amplified the problem. Analysis of trade data shows that the US is the world's largest importer of face masks, eye protection, and medical gloves, making it highly vulnerable to disruptions in exports of medical supplies. We conclude that market prices are not appropriate mechanisms for rationing inputs to health because health is a public good. Removing the profit motive for purchasing PPE in hospital costing models, strengthening government capacity to maintain and distribute stockpiles, developing and enforcing regulations, and pursuing strategic industrial policy to reduce US dependence on imported PPE will help to better protect healthcare workers with adequate supplies of PPE.

## 1. Introduction

Since early 2020 the US has experienced a severe shortage of personal protective equipment (PPE) needed by healthcare workers fighting the COVID-19 pandemic (Emanuel et al., 2020; Livingston et al., 2020). In protests covered by the news media, healthcare workers compared themselves to firefighters putting out fires without water and soldiers going into combat with cardboard body armor. Medical professionals have called for federal government action to mobilize and distribute adequate supplies of protective equipment, especially gloves, medical masks, goggles or face shields, gowns, and N95 respirators. N95 respirators, which have demonstrated efficacy in reducing respiratory infections among healthcare workers, have been in particularly short supply (MacIntyre et al., 2014).

Without proper PPE, healthcare workers are more likely to become ill. A decline in the supply of healthcare due to worker illness combines with intensified demand for care, causing healthcare infrastructure to become unstable, thus reducing the quality and quantity of care available. Sick healthcare workers also contribute to viral transmission.

Hence ill practitioners increase the demand for care while simultaneously reducing health system capacity. This endogeneity makes a PPE shortage a systemwide public health problem, rather than solely a worker's rights or occupational health issue. PPE for healthcare workers is a key component of infection prevention and control; ensuring that healthcare workers are protected means more effective containment for all.

We investigate the four main contributing factors behind the US shortage of PPE in 2020 and their interaction. First, a dysfunctional budgeting model in hospital operating systems incentivizes hospitals to minimize costs rather than maintain adequate inventories of PPE. Second, a major demand shock triggered by healthcare system needs as well as panicked marketplace behavior depleted PPE inventories. Third, the federal government failed to maintain and distribute domestic inventories. Finally, major disruptions to the PPE global supply chain caused a sharp reduction in PPE exported to the US, which was already highly dependent on globally-sourced PPE. Market and government failures thus led PPE procurement by hospitals, healthcare providers, businesses, individuals, and governments to become competitive and

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costly in terms of time and money. The remainder of this article provides detailed support for the argument that the enormous PPE shortages arose from the compounding effects of these four factors. We conclude that because health is a public good, markets are not suitable mechanisms for rationing the resources necessary for health, and transformative changes are necessary to better protect healthcare practitioners.

## 2. Background

The 2020 shortage of PPE was an eventuality that nonetheless came as a surprise. The US experienced heightened demand for PPE in the mid- to late-1980s following the identification of the Human Immunodeficiency Virus and the release of Centers for Disease Control (CDC) guidelines for protecting health personnel (Segal, 2016). The 2001 attack on the World Trade Center heightened concerns that insufficient PPE left healthcare workers vulnerable to exposure to toxins from bioterrorism and other future public health emergencies (O'Boyle et al., 2006). The 2014 Ebola Virus outbreak made the importance of protection for health workers especially apparent when two nurses with inadequate protection treated an Ebola-infected patient in a Dallas hospital and became infected themselves. Subsequent studies pointed to global PPE shortages as a contributing factor to infections and deaths of hundreds of healthcare workers in West African countries hit hardest by the Ebola Virus (Hersi et al., 2015).

Although various stakeholders (governments, multilateral agencies, health organizations, universities) warned of the possibility of a major infectious disease outbreak, particularly pandemic influenza, most governments were underprepared. The World Economic Forum's annual *Global Risks Report* even showed a decline in the likelihood and impact of a spread of infectious diseases as a predicted risk factor between 2015 and 2020 (WEF, 2015, 2020). The problems created by lack of preparation were exacerbated by the high transmissibility of COVID-19 and the severity of symptoms. Contributing to the inadequate stockpiles of PPE were the Trump administration's policies - which included public health budget cuts, "streamlining" the pandemic response team, and a trade war with the country's major supplier of PPE - weakening the CDC's capacity to prepare for a crisis of this magnitude (Devi, 2020).

The PPE shortage is reflected in survey data on PPE usage and in data on COVID-19 morbidity and mortality. As of May 2020, 87% of nurses reported having to reuse a single-use disposable mask or N95 respirator, and 27% of nurses reported they had been exposed to confirmed COVID-19 patients without wearing appropriate PPE (NNU, 2020). As of July 28, 2020, at least 1842 nurses, doctors, physicians assistants, medical technicians, and other healthcare workers globally, and 342 in the US, died due to the virus, and many more became sick (Medscape, 2020). The CDC aggregate national data of 172,844 cases among healthcare personnel and 743 deaths (CDC, 2020b). Healthcare workers have died from COVID-related causes in all but 19 states (Fig. 1).<sup>1</sup>

Healthcare worker deaths by state recorded in Medscape (2020) are correlated with CDC (2020b) COVID-19 cases by state (Pearson's  $r$  of 0.552,  $p < 0.00$ ) and even more strongly correlated with CDC-confirmed COVID deaths in the general population (Pearson's  $r$  of 0.953,  $p < 0.00$ ). These correlation coefficients are indicative of healthcare worker exposure to the virus, and of the critical role of PPE and healthcare systems for population health. In other words, population health is a function of the healthcare system and wellbeing of healthcare workers, and the wellbeing of healthcare workers is a function of the healthcare system and PPE.

We now turn to our analysis of PPE shortages, which identifies four contributing factors: the way that hospitals budget for PPE,

domestic demand shocks, federal government failures, and disruptions to the global supply chain (Fig. 2). These four factors arose from a number of processes and worked concurrently to generate severe shortages.

## 3. The PPE Budgeting Model

The first factor-the budgeting model used by hospitals - is a structural weakness in the healthcare system. The Occupational Safety and Health Administration (OSHA) requires employers to provide healthcare workers with PPE free of charge (Barniv et al., 2000; OSHA, 2007). From the perspective of employers, PPE is an expenditure - a cost. PPE is unique compared to all of the other items used to treat patients (such as catheters, bed pans, and medications) which operate on a cost-passing model, meaning they are billed to the patient/insurer.

An ideal model for budgeting PPE would align the interests of employers, healthcare workers, and patients and facilitate effective, efficient care that is safe for all. Instead, the existing structure puts employers who prioritize minimizing costs and healthcare workers who prioritize protecting their safety and the health of their patients in opposition, leaving governmental bodies to regulate these competing priorities (Moses et al., 2013).

Employers, be they privately-owned enterprises, private healthcare clinics, or public hospitals, seek to minimize costs. In economic theory, cost-minimization is compelled through market competition with other suppliers. In practice, cost-minimization is a strategy for maintaining profitability or revenue. Therefore, hospital managers adopt cost-effective behaviors by reducing expenditures in the short term to lower costs (McLellan, 2017). Despite some hospitals' tax-exempt status, hospitals function like other businesses: they pursue efficiency and cost minimization (Bai and Anderson, 2016; Rosenbaum et al., 2015). The pursuit of efficiency means hospitals tend to rely on just-in-time production so that they do not need to maintain PPE inventories. The OSHA requirement effectively acts as an unfunded mandate, imposing responsibility for the provision of PPE, and the costs of provision, on employers.

When it is difficult to pass along the costs of unfunded mandates to workers (in the form of lower wages) or customers (in the form of higher prices), employers resist such cost-raising legal requirements. The tension between healthcare workers and employers over PPE is evident in the way nurses' unions push federal and state agencies to establish protective standards. It is demonstrated by the testimony of Deborah Burger, the co-president of National Nurses United to the Committee on Oversight and Government Reform in the US House of Representatives in October 2014. She advocated for mandated standards for PPE during the Ebola Virus while employers were pushing for voluntary guidelines:

[O]ur long experience with US hospitals is that they will not act on their own to secure the highest standards of protection without a specific directive from our federal authorities in the form of an Act of Congress or an executive order from the White House...The lack of mandates in favor of shifting guidelines from multiple agencies, and reliance on voluntary compliance, has left nurses and other caregivers uncertain, severely unprepared and vulnerable to infection (Govinfo, 2014).

Employer resistance is short-sighted but unsurprising in the existing costing structure. The costing structure for other items, like catheters, allows employers to pass costs on to patients and insurers. The implication is that if employers (hospitals) cannot pass along the cost of the OSHA mandate to insurance companies, then employers do not have an economic incentive to encourage employees to use PPE, replace it frequently, or keep much of it in stock, at least until any gains from cost-minimization are lost due to illness among employees.

The budgeting model is especially problematic when demand increases sharply, such as during the Ebola Virus in 2014 and the H1N1 influenza pandemic in 2009. As the site where new pathogens may be

<sup>1</sup> The full dataset is available at doi:<https://doi.org/10.6084/m9.figshare.12751850>

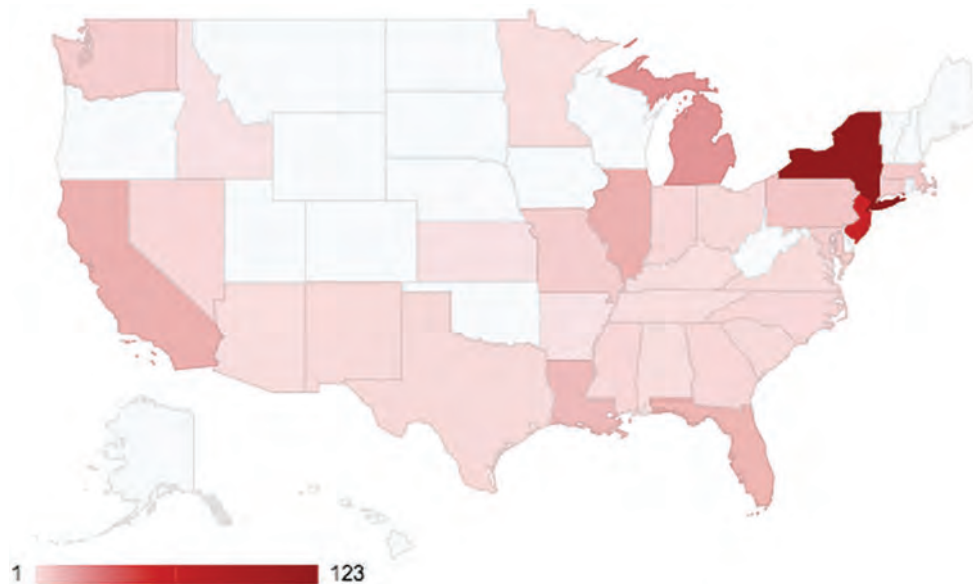


Fig. 1. Healthcare worker deaths by state, July 28, 2020. \*Map created by the authors using Google Sheets and [Medscape \(2020\)](#). Unshaded states had no healthcare worker deaths.

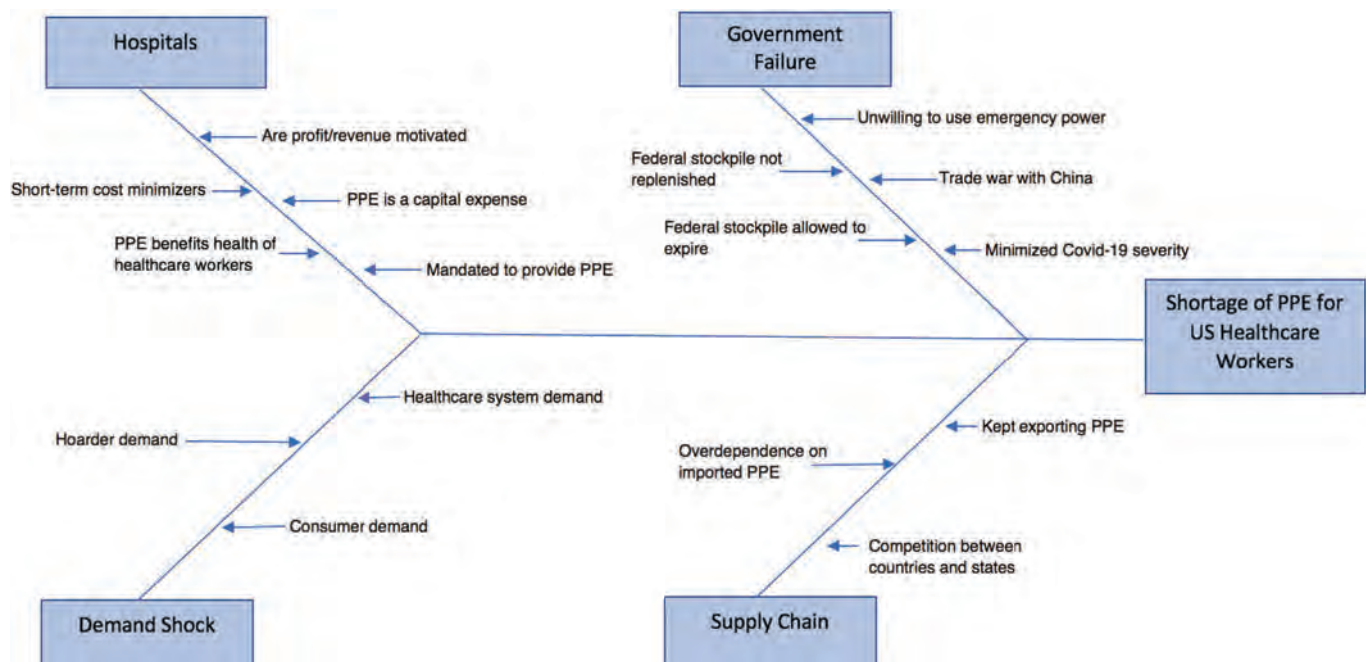


Fig. 2. Factors contributing PPE shortage.

introduced unexpectedly, hospitals are uniquely challenged compared to other employers to provide protection (Yarbrough et al., 2016). But even during predictable fluctuations in demand, the existing model does not ensure that adequate quantities of PPE are available. However, previous studies have framed these problems as consequences of non-compliance among healthcare workers rather than noncompliance among employers (Ganczak and Szych, 2007; Gershon et al., 2000; Nichol et al., 2013; Sax et al., 2005).

Hospitals might be incentivized to avoid shortages by passing PPE costs on to patients and insurers, like other items used in care, but that approach is not the norm. This alternative cost-passing model also leaves much to be desired. Where the current model induces tension between workers and employers, a cost-passing model would effectively situate practitioners against patients (Cerinara, 2001). If

patients pay the costs of PPE, they might prefer that practitioners are less safe to defray costs. Such a model is detrimental to both healthcare workers and patients. Introducing tension to a relationship built on care and trust is precisely why the employer, not the patient, should be required to provide PPE to healthcare workers at no cost to the worker. Practitioners and patients should be allowed to share the common goal of improving patients' well-being.

Some labor economists argue that employers could (or do) pay compensating wage differentials to compensate healthcare workers for working in unsafe conditions (Hall and Jones, 2007; Rosen, 1986; Viscusi, 1993). They believe that workers subject to hazardous conditions command a higher wage from employers compared to workers in less dangerous employment. Higher wages for healthcare workers would then be embedded in the costs of care, which include pay for



practitioners, that are passed along to insurance companies. However, this counter-argument does not apply to healthcare practitioners because its necessary conditions are not met. Workers would need perfect foresight that a crisis would require more protective equipment, knowledge of their employers' stockpile of PPE, perfect information about the hazards of the disease, and how much higher a wage they would need as compensation for these risks. This information is not available for workers who may be exposed to entirely novel pathogens that have unknowable impacts.

Neither the existing budgeting model nor the cost-passing model align the interests of the employer, healthcare worker, and patient. Yet these three agents have a shared interest in practitioners' use of PPE. PPE, like catheters, are inputs to health. But unlike catheters, the primary beneficiary of PPE use is less easily identifiable than that of other inputs. While healthcare practitioners may appear to be the primary beneficiaries of PPE, the benefits are more diffuse. Patients benefit from having healthy nurses who are not spreading infections, nurses benefit from their own health, and hospitals benefit from have a healthy workforce. Nurses' health is an input to patient health, to the functioning of the hospital, and to the healthcare system. In other words, every beneficiary depends on practitioners' health, which depends on PPE. Still, employers' short-term profit motive dominates the interests of healthcare workers and patients, which suggests that alternative models that are not motivated by profit-seeking should be explored.

#### 4. The Demand Shock

The second contributing factor to the US shortage of PPE during the COVID-19 outbreak was the rapid increase in demand by the healthcare system and the general public. In a national survey of hospital professionals in late March 2020 close to one-third of hospitals had almost no more face masks and 13% had run out of plastic face shields, with hospitals using a number of strategies to try to meet their demand including purchasing in the market and soliciting donations (Kamerow, 2020). American consumers also bought large supplies of PPE as the sheer scale of the crisis and the severity of the disease prompted a surge in panic buying, hoarding, and resales of masks and gloves. As an indicator of scale, in March 2020 Amazon cancelled more than half a million offers to sell masks at inflated prices and closed 4000 accounts for violating fair pricing policies (Cabral and Xu, 2020). Panicked buying contributed to a sudden and sharp reduction in American PPE inventories, which were already inadequate to meet demand from the healthcare system.

There were two different kinds of non-healthcare buyers of PPE. A subset sought profits and bought and hoarded PPE items such as N95 respirators with the intent of reselling them at inflated prices (Cohen, Cohen 2020a, Cohen 2020b). It is likely that the majority, however, were worried consumers. While it may be tempting to blame consumers for seemingly irrational consumption, their decisions are more complex. Panic buyers are consumers in the moment of buying PPE, but they are workers as well; people buy PPE because they are afraid of losing the ability to work and support themselves and their families. Put simply, the dependence of workers on wages to pay for basic necessities contributes to panic when their incomes are threatened. This is rational behavior in the short term given existing conditions and economic structures. Still, PPE belongs in the hands of those whose health has many beneficiaries: practitioners. Eventually both the profiteer and the average, panicked worker/consumer will require healthcare, and contributing to the decimation of the healthcare work force is in no one's interest. Underlying consumption behavior was intense fear of not only the disease but also fear of shortages. This panic reverberated throughout the supply chain as manufacturers tried to increase their production capacity to meet the demand for PPE (Mason and Friese, 2020).

One can conceptualize this mismatch between PPE demand and supply in an *ability-to-pay* framework. In much of economic theory,

markets match supply and demand to determine the price of a good or service, and the price operates as a rationing mechanism. Market actors choose to buy or sell at that given price. But there are problems with this framework. On the demand side, some people cannot "choose" to buy a product because they cannot afford it; they lack the ability to pay, so the decision is made for them. An example is a potential trip to the doctor for the uninsured. For many Americans, whether to go to the doctor, or whether to have insurance, is not a choice; the choice is made for them because they are unable to pay.

On the supply side, the ability-to-pay framework remains, except the product in question is an input. In healthcare, the practitioner is the proximate supplier of care and inputs to health are intermediate goods. The supplier's - or their employer's - ability (and willingness) to pay for inputs to care, including PPE, determines the quality and quantity of care the practitioner is able to supply. When healthcare workers do not have PPE (e.g. because others bought it and resold it at extortionary prices), they are unable to provide the care patients need. But reselling behavior is also economically rational, if unethical, at least in the short term. Indeed, ability-to-pay works well for the hoarder/reseller, who both contributes to and profits from the shortage. It is in the pursuit of profits - of monetary gain - that the mismatch between PPE demand and supply resides.

On the demand side there is a person in need of care who is constrained by their inability to pay, while on the supply side there is a practitioner who is constrained by their inability to access the resources required to provide high quality care safely. The ability-to-pay framework is incompatible with the optimal allocation of resources when the ultimate aim is something other than monetary gain. Hence market prices are not a good mechanism for rationing vital inputs to health such as PPE, and the profit motive is ineffective in resolving this mismatch between demand and supply.

#### 5. Government Failure

Given the large-scale failure of the market to ensure sufficient supplies of PPE for practitioners, the government could have taken a number of corrective actions: it could have coordinated domestic production and distribution, deployed supplies from the Strategic National Stockpile, or procured PPE directly from international suppliers (HHS, 2020; Maloney, 2020).

The US government has anticipated PPE shortages since at least 2006 when the National Institute for Occupational Safety and Health commissioned a report examining the lack of preparedness of the healthcare system for supplying workers with adequate PPE in the event of pandemic influenza (Liverman and Goldfrank, 2007). In a scenario in which 30% of the US population becomes ill from pandemic influenza, the estimated need for N95 respirators is 3.5 billion (Carias et al., 2015). However, the actual supply in the US stockpile was far smaller at 30 million, thus serving as a strong rationale to invoke the Defense Production Act to manufacture N95 respirators and other PPE (Azar, 2020; Friese et al., 2020; Kamerow, 2020). Further, the PPE in the national stockpile was not maintained on a timely basis to prevent product expiration, forcing the CDC to recommend use of expired N95s (CDC, 2020a).

Adding to the problems of CDC budget cuts before and during the pandemic and their failure to stockpile PPE was the unwillingness of the federal government to invoke the Defense Production Act to require private companies to manufacture PPE, ventilators, and other critical items needed to treat patients (Devi, 2020). By July 2020, at which time the US already had more COVID-19 cases than any other country in the world, there were still calls from top congressional leaders and healthcare professionals, including the Speaker of the House of Representatives and the president of the American Medical Association, for the Trump administration to use the Defense Production Act to boost domestic production of PPE (Madara, 2020; Pelosi, 2020; Rosen, 2020a). Researchers had also begun to publish studies on how to safely

**Table 1**

Top 4 Global Exporters and Importers of Face Masks, Eye Protection, and Medical Gloves; market shares (out of 100%) in parentheses.

Exports		Imports	
2018	2019	2018	2019
<b>FACE MASKS</b>			
China (38.1%)	China (38.4%)	USA (31.7%)	USA (33.8%)
Germany (8.8%)	Germany (8.8%)	Japan (9.0%)	Japan (9.2%)
USA (8.0%)	USA (8.6%)	Germany (8.7%)	Germany (8.8%)
Viet Nam (4.0%)	Viet Nam (5.0%)	France (4.2%)	France (4.5%)
<b>EYE PROTECTION</b>			
China (52.6%)	China (53.3%)	USA (30.3%)	USA (30.2%)
Hong Kong (5.4%)	Other Asia nes <sup>+</sup> (4.8%)	Japan (6.5%)	Japan (6.7%)
Other Asia nes <sup>+</sup> (4.8%)	Hong Kong (4.7%)	France (4.6%)	France (4.8%)
USA (4.0%)	USA (3.8%)	UK (4.4%)	UK (4.7%)
<b>MEDICAL GLOVES</b>			
Malaysia (39.2%)	Malaysia (38.2%)	USA (30.7%)	USA (33.0%)
China (20.4%)	China (20.8%)	Germany (8.3%)	Germany (8.5%)
Thailand (10.4%)	Thailand (10.8%)	Japan (5.9%)	Japan (6.2%)
Belgium (4.6%)	Belgium (4.6%)	France (3.8%)	UK (4.1%)

Processed by authors using UN Comtrade database for exports and imports (re-exports and re-imports are excluded). We classify COVID-19 medical supplies as: face masks are HS Codes 6307.90 and 9020.00; eye protection is HS Codes 9004.90 and 3926.20; and medical gloves are HS Codes 4015.11, 4015.19, 6116.10, and 6216.00 (WHO, 2020). As of August 2020 China and Other Asia nes had not yet reported their 2019 totals, so market shares for 2019 are approximations based on 2018 values for China and Other Asia nes.

<sup>+</sup> Denotes other territories in Asia not elsewhere specified.

re-use PPE as it became clear that shortages would continue (Rowan and Laffey, 2020). Hence even five months into the crisis, the profit motive was still inadequate to attract new producers, which indicates that markets do not work to solve production and distribution problems in the case of inputs to health.

Not only did the government poorly maintain already-inadequate supplies and fail to raise production directly, it also failed to provide guidance requested by private sector medical equipment distributors and the Health Industry Distributors Association (HIDA), a trade group of member companies (Maloney, 2020). The private sector sought guidance about accessing government inventories, expediting PPE imports, and how to prioritize distribution, as indicated in this communication from HIDA's president:

Specifically, distributors need FEMA and the federal government to designate specific localities, jurisdictions or care settings as priorities for PPE and other medical supplies. The private sector is not in a position to make these judgments. Only the federal government has the data and the authority to provide this strategic direction to the supply chain and the healthcare system (Rowan, 2020).

Moreover, it was not until early April 2020 that the Trump administration issued an executive order for 3 M, one of the largest American producers and exporters of N95 respirators, to stop exporting masks and to redirect them to the US market (Whitehouse.gov, 2020).

Looking up the supply chain, at least one distributor proposed bringing efforts to procure PPE internationally under a federal umbrella to the Trump administration (Maloney, 2020, p. 11). States-as-buyers confront the same market-incentivized structural issues that individual buyers face. A single federal purchaser would reduce state-level competition for buying PPE abroad, and mitigate the resulting inflated prices and price gouging by brokers acting as intermediaries between states-as-buyers and suppliers. The federal government chose not to take on this role.

The profound government failures related to producing, procuring,

and distributing PPE effectively, in ways not achievable through markets, are likely to have long-term impacts. The same distribution companies characterized, “the economics of supplying PPE in these circumstances” as “not sustainable” (Maloney, 2020, p. 3). They also expressed concern about the ongoing availability of raw materials required to manufacture PPE in the future. HIDA member companies expressed these concerns about supply chain issues in calls with federal agencies between January and March 2020, specifically with respect to long-term supply chain issues impacting the upcoming 2020-21 flu season (Maloney, 2020, p. 5). In mid-June, FEMA officials acknowledged that, “the supply chain is still not stable” (Maloney, 2020, p. 9).

## 6. Global Supply Chain Breakdown

A smoothly functioning supply chain has immediate impacts on the ability of governments and health personnel to contain an epidemic. The infectiousness and virulence of the disease affects the demand for PPE, just as the supply chain's functionality impacts the spread of the disease by improving practitioners' ability to treat their patients while remaining safe themselves (Gooding, 2016). The US domestic supply chain of PPE has been unable to sufficiently increase production to meet the enormous surge in demand. A large portion of the PPE in the US is produced in other countries. Excessive reliance on off-shore producers for PPE proved problematic in earlier public health emergencies (especially the 2009 H1N1 influenza pandemic and the 2014 Ebola Virus epidemic), and this lesson appears to be repeating itself during the COVID-19 pandemic (Patel et al., 2017).

The incentive for hospitals and care providers to keep costs down has kept inventories low and driven sourcing to low-cost producers, especially in China. China's low production costs combined with high quality have made it the global leader in producing a vast range of manufactured goods, including protective face masks, gloves, and gowns. Even with the emergence of other low-cost exporters, China dominates the global market for PPE exports. Meanwhile, the US is the world's largest importer of PPE. Yet although the US is extremely dependent on the global supply chain, US manufacturers of PPE are also major exporters given the profits available in world markets.

The trade data in Table 1 show the world's four top exporters of face masks, eye protection, and medical gloves. The data is drawn from the UN Comtrade database, using trade classifications from the WHO's World Customs Organization for COVID-19 medical supplies (WHO, 2020). In these data, the category “face masks” includes textile face masks with and without a replaceable filter or mechanical parts (surgical masks, disposable face-masks, and N95 respirators); “eye protection” includes protective spectacles and goggles as well as plastic face shields; and “medical gloves” includes gloves of different materials such as rubber, cloth, and plastic (WHO, 2020). We collected data for the 2015-2019 period. Because patterns in 2015-2017 were very similar to those of 2018, the table begins with 2018.<sup>2</sup>

China is the world's largest exporter of medical face masks and eye protection, followed not far behind by the US in terms of rank. The fact that the US recently exported such large amounts of a commodity that in early 2020 was marked by extreme shortages is indicative of the lack of public health planning and political will. Unlike the case of masks and eye protection, the US is not a top exporter of medical gloves. The three largest exporters of medical gloves are all in Asia and are well endowed with natural rubber. Table 1 also shows that the US is by far the largest importer of face masks, eye equipment, and medical gloves in the world market, followed by Japan, Germany, France, and the UK. Overall, this analysis points to the high vulnerability of the US to disruptions in the global supply chain of face masks, eye protection, and medical gloves, and especially to disruptions in exports from China.

<sup>2</sup> The full dataset is available at doi:<https://doi.org/10.6084/m9.figshare.12915866.v1>

The COVID-19 outbreak in China in late 2019 led to a surge in demand within China for PPE, especially for disposable surgical masks as the government required anyone leaving their home to wear a mask. In response to demand, China's government not only restricted its PPE exports, it also purchased a substantial portion of the global supply (Burki, 2020). These shocks contributed to an exceedingly large disruption to the global supply chain of PPE. As the virus spread to other countries, their demand for PPE also increased and resulted in additional pressure on dwindling supplies. In response, other global producers of PPE, including India, Taiwan, Germany, and France, also restricted exports. By March 2020, numerous governments around the world had placed export restrictions on PPE, which in turn contributed to higher costs. The price of surgical masks rose by a factor of six, N95 respirators by three, and surgical gowns by two (Burki, 2020).

While exporting countries used trade policy to curb exports of medical supplies, up through early 2020 the US was using trade policy to protect domestic medical supply manufacturers from otherwise-less-expensive imports with import tariffs, thus raising the price of PPE faced by US hospitals and consumers. In late 2019, the average tariff rate on PPE and other medical supplies from China amounted to 25%, with proposals for additional increases underway (CRS, 2019). The Trump administration's trade war with China thus contributed to higher prices and lower availability of PPE in the US market when the crisis hit.

Overall then, with respect to imports, the US is the biggest importer and so is highly dependent on the global supply chain, and with respect to exports, the US failed to prioritize the country's public health needs. After the COVID-19 outbreak, the US was late to restrict PPE exports as other countries did, and the government failed to take the opportunity to order millions of masks in the years leading up to COVID-19 crisis, including the two-month period between when the virus was recognized in China and when local transmission was detected in the US.

The point here is not that the US should refrain from exporting PPE to other countries altogether; developing countries are dependent upon the same supply chain. Rather, in the case of PPE there is a market failure at the global scale. Healthcare and other inputs to health (particularly PPE) are intermediate goods with substantial impacts on public health that the market mechanism does not allocate in an optimal way. When the desired outcome is a public good like health, rather than monetary gain, market prices are poor directors of production and distribution.

## 7. Policy Recommendations and Future Research

This analysis has highlighted how markets and the implied profit motive fail to address, and in fact are a source of, the structural weakness in the US healthcare system that laid the foundation for extreme shortages of PPE during the COVID-19 outbreak. Problems with domestic demand and the global supply chain intensified the shortages. The profit motive is dysfunctional in public health because markets also fail to align the interests of the actors involved. Markets are not a good mechanism for rationing resources that are necessary for health because health is a public good. The COVID-19 crisis is not creating new problems in this sense; rather, it is sharpening and revealing existing systemic weaknesses and tensions.

Our analysis did not explicitly reference the gendered dimensions of PPE shortages, but there are several. First, because nurses generally have more direct contact with patients, and nearly 90% of nurses are women, women healthcare workers also bear disproportionately greater risk of exposure to infectious diseases. Overall, women are 75.4% of healthcare practitioners and those in technical occupations and 86.9% of those in healthcare support occupations in the US (authors' calculations from 2019 Current Population Survey data).<sup>3</sup> Yet the majority of PPE that is

available is designed for men, meaning that women are often left grappling with poorly fitted PPE, especially oversized gloves, goggles, and masks (Criado-Perez, 2019). Further, the overrepresentation of women in healthcare means that under-provision of PPE has gendered impacts. Hence the seemingly gender-neutral costing model described in our analysis does not have gender-neutral outcomes. By implication, a meaningful change in the way healthcare is funded that incentivizes hospitals to invest in adequate inventories of PPE will disproportionately benefit women workers. The gender differential is even more striking in the case of home-health aides. More research is needed on the extent to which men and women are impacted differently by PPE shortages. Another important question is the extent to which gender issues - such as women's relative lack of bargaining power in hospital administration - contributed to shortages to begin with.

Our analysis points to the need for transformative changes and corrective actions to better protect healthcare practitioners. We must consider a full range of tools that not only create incentives for hospitals to protect their practitioners with PPE, but also generate effective institutional capacity to ensure that healthcare providers can mobilize quickly to handle pandemics. We have several recommendations:

- (1) prepare hospitals to better protect practitioners by removing the profit motive from consideration in the purchasing and maintenance of PPE inventories;
- (2) strengthen the capacity of local, state, and federal government to maintain and distribute stockpiles;
- (3) improve enforcement of OSHA's current regulations around PPE, including requirements to source the proper size for each employee;
- (4) develop new regulations to reduce practitioner stress and fatigue (Cohen and Venter, 2020; Fairfax, 2020);
- (5) improve the federal government's ability to coordinate supply and distribution across hospitals and local and state governments (Patel et al., 2017);
- (6) consider strategic industrial policy to increase US production of medical supplies and to reduce the dependence on the global supply chain for PPE;
- (7) consider industrial policy to incentivize PPE production using existing technology while encouraging development, testing, and production of higher-quality, reusable PPE.

These changes will address the costing-model issue, the demand problem, the federal government failures, and supply chain vulnerability, but they will not be politically palatable. Creating the institutional capacity for building and maintaining a viable stockpile of PPE will contribute to all of these policy options. Such shifts will help set the stage for what global health should look like moving forward. COVID-19 was not the first pandemic nor will it be the last, especially given the likely impacts of climate change.

## CRedit authorship contribution statement

**Jennifer Cohen:** Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Writing - original draft, Writing - review & editing, Visualization. **Yana van der Meulen Rodgers:** Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Writing - original draft, Writing - review & editing, Visualization.

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<sup>3</sup> The full dataset and data specifically for healthcare workers are available at doi:<https://doi.org/10.6084/m9.figshare.12751838>



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# Exhibit

## 25





# Crowding and the shape of COVID-19 epidemics

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**The coronavirus disease 2019 (COVID-19) pandemic is straining public health systems worldwide, and major non-pharmaceutical interventions have been implemented to slow its spread<sup>1–4</sup>. During the initial phase of the outbreak, dissemination of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was primarily determined by human mobility from Wuhan, China<sup>5,6</sup>. Yet empirical evidence on the effect of key geographic factors on local epidemic transmission is lacking<sup>7</sup>. In this study, we analyzed highly resolved spatial variables in cities, together with case count data, to investigate the role of climate, urbanization and variation in interventions. We show that the degree to which cases of COVID-19 are compressed into a short period of time (peakedness of the epidemic) is strongly shaped by population aggregation and heterogeneity, such that epidemics in crowded cities are more spread over time, and crowded cities have larger total attack rates than less populated cities. Observed differences in the peakedness of epidemics are consistent with a meta-population model of COVID-19 that explicitly accounts for spatial hierarchies. We paired our estimates with globally comprehensive data on human mobility and predict that crowded cities worldwide could experience more prolonged epidemics.**

Predicting the epidemiology of the COVID-19 pandemic is a priority for guiding epidemic responses around the world. China has undergone its first epidemic wave, and, remarkably, cities across the country are now reporting few or no locally acquired cases<sup>8</sup>. Analyses have indicated that the spread of COVID-19 from Hubei to the rest of China was driven primarily by human mobility from Wuhan<sup>6,9</sup>, and that the stringent measures to restrict human movement and public gatherings within and among cities in China were associated with bringing local epidemics under control<sup>5</sup>. Key uncertainties remain as to which geographic factors drive the local transmission dynamics of COVID-19, and initial analysis suggests a limited role of climate in determining epidemic growth<sup>10</sup>.

Spatial heterogeneity in infectious disease transmission can be influenced by local differences in population or human movements, such that high local population densities might catalyze the spread of new pathogens due to higher contact rates with susceptible

individuals<sup>11,12</sup>. For respiratory pathogens, the temporal clustering of cases in an epidemic (that is, the shortest period during which most cases are observed) varies with increased indoor crowding and socio-economic and climatic factors<sup>13–18</sup>. The temporal concentration of cases is minimized when incidence is spread evenly across time and increases as incidence becomes more concentrated in particular days, as has been observed for influenza<sup>13</sup>. In any given location, a higher temporal concentration of cases might require a larger surge capacity in the public health system<sup>19</sup>, especially for an emerging respiratory pathogen such as COVID-19 (ref. <sup>20</sup>).

## Results

**Spatial population structure predicts the shape of epidemics of COVID-19.** China and Italy provide detailed epidemiological time series for COVID-19 (refs. <sup>2,21,22</sup>) across a wide range of geographic contexts; hence, the outbreaks in these countries provide an opportunity to evaluate the role of local factors in shaping epidemic behavior. We used daily epidemiological data from Chinese cities<sup>23,24</sup> and Italian provinces, climate and population data and the response to local interventions as measured by human mobility data from Baidu<sup>25</sup> and the COVID-19 Aggregated Mobility Research Dataset (<https://www.google.com/covid19/mobility/>) to identify drivers of transmission, with a focus on how the temporal clustering of cases differs between prefectures in China and provinces in Italy. A summary of the main findings, limitations and policy implications of our study is shown in Table 1.

We used daily incidence data of confirmed COVID-19 cases aggregated at the prefectural level ( $n=293$ ) in China (Fig. 1a) and at the province level ( $n=108$ ) in Italy. Prefectures and provinces are administrative units that typically have one urban center (Fig. 1b). We aggregated daily individual-level data collected from official government reports<sup>22</sup>. Epidemiological data in each prefecture were truncated to exclude dates before the first and after the last day of reported cases during the first epidemic. Cases reported after March 1, 2020, that were imported from outside China were excluded from the analysis. All epidemiological data from Hubei Province were excluded because of the lack of prefecture-level epidemiological data and issues with consistent reporting before January 20, 2020. The shape of epidemic curves varied among prefectures, with some

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**Table 1 | Policy summary**

<b>Background</b>	There are obvious differences in the geographic distribution of COVID-19 cases within and among countries. We hypothesize that some of these differences are due to spatial variability in population crowding. Using detailed case count data from COVID-19 among cities in China and Italy, we fit multiple regression models to explain variability in the shape of epidemics among them.
<b>Main findings and limitations</b>	We found that cities with higher crowding have longer epidemics and higher attack rates after the first epidemic wave. Using a meta-population model that splits cities into neighborhood subunits is consistent with these findings, suggesting that the hierarchical structure and organization of cities are influential in defining their epidemics. We predict that comparatively rural areas might experience more peaked epidemics. As with all modeling studies, further data generated during the epidemic might change our parameter estimates, and large-scale serological data would help verify our findings. Further, it will be important to evaluate whether cities that have greater peak incidence might be more prone to strained healthcare systems.
<b>Policy implications</b>	Our results have implications for assessing the drivers of transmission of SARS-CoV-2. Spatial factors, such as crowding and population density, might elevate the risk of sustained (longer) outbreaks, even after the implementation of lockdowns. Cities that are less crowded and have lower attack rates might be more susceptible to experiencing future outbreaks if SARS-CoV-2 is successfully re-introduced.

showing a rapid rise and decline in reported cases and others showing more prolonged epidemics (Fig. 1a and Extended Data Fig. 1).

To characterize the temporal clustering of cases for each prefecture and province, we calculated the Shannon diversity index of the distribution of incident cases<sup>13</sup>. We defined the incidence distribution  $p_{ij}$  for a given city to be the proportion of COVID-19 cases during the first epidemic wave  $j$  that occurred on day  $i$ . The Shannon index of incidence for a given prefecture and year is given by  $v_j = \left( -\sum_i p_{ij} \log p_{ij} \right)^{-1}$ . Because  $v_j$  is a function of the disease incidence curve in each location, rather than of absolute incidence values, it is less sensitive to varying reporting rates among cities. The Shannon index is maximal when all cases occur on the same day and minimal when each day of the epidemic has the same number of incident cases (for example, ‘flat’ epidemic curves). It is highly correlated with alternative measures of epidemic peakedness, such as the proportion of cases that occur at the peak  $\pm 1$  d (Extended Data Fig. 2). The total attack rate of reported COVID-19 cases in each prefecture is strongly negatively correlated with the Shannon index in China (Fig. 1c); hence, less peaked epidemics have a larger total attack rate (Pearson’s  $r = -0.67$ , 95% confidence interval (CI),  $-0.73$  to  $-0.59$ ,  $P < 0.01$ ; for Italy,  $R^2 = 0.33$ ,  $P < 0.01$ ). We hypothesize that this variation among cities in total attack rate and the temporal clustering of cases is the result of the spatial organization of human populations.

To test this hypothesis, we used Lloyd’s index of mean crowding<sup>13,26</sup>, treating the population count of each spatial grid cell as an individual unit (Fig. 1). The term ‘mean crowding’ used here is a specific geographic metric that summarizes both population density and how density is distributed across a prefecture (that is, patchiness; Fig. 1). Higher values of Lloyd’s index suggest a spatially aggregated population structure. For example, Xi’an has high values of crowding, whereas Bozhou has a similar population density but a population that is more evenly distributed across the prefecture (Fig. 1b). We performed log-linear regression modeling to determine the association between the temporal clustering of cases with socio-economic and environmental variables, including reductions in population flows during the outbreak period (Methods).

We found that the temporal clustering of cases was significantly negatively correlated with the mean number of contacts ( $P < 0.01$ ) but positively correlated with mean population density ( $P < 0.01$ ) and varies widely across China and Italy (Fig. 2 and Supplementary Table 1). This observation contrasts with the expectations of simple and classical epidemiological models, which predict higher peakedness in crowded areas due to the increased availability of susceptible individuals<sup>27,28</sup>. The spatial scale at which this relationship is best explained was  $10 \times 10$  km, but results were statistically significant

at all spatial scales between 1 and 50 km<sup>2</sup> (Extended Data Fig. 3;  $P < 0.01$ ). Mean specific humidity and population mobility remained significantly negatively correlated with epidemic peakedness when included in a multivariate model with crowding (Supplementary Table 1; all  $P < 0.01$ ).

Using weekly human mobility data, we found that within-city human mobility during the outbreak was correlated with the temporal clustering of cases—that is, prefectures that have larger reductions in mobility also have lower epidemic peakedness (Extended Data Fig. 4 and Supplementary Table 1;  $P < 0.01$ ). When we combined mobility reduction in a model with crowding and humidity, we found that these variables each remained significant predictors of the temporal clustering of cases (Extended Data Table 1;  $P < 0.01$ ). These results suggest that, although measures to reduce mobility can successfully lead to a flattening of the epidemic curve, population crowding is an independent contributor to the shape of epidemics in these two countries.

Our multivariate model can explain a large fraction of the variation in epidemic peakedness among Chinese cities and Italian provinces, and sensitivity analyses confirm the robustness of our results to potential noise in location-specific incidence distributions ( $R^2 = 0.638$ ; Extended Data Fig. 2, Supplementary Table 1 and Extended Data Fig. 5). To evaluate the out-of-sample performance of our model, we 1) performed  $n$ -fold cross validation at the prefecture level in China (Spearman’s  $\rho = 0.61$ ; 95% bootstrap CI, 0.52–0.68;  $P < 0.01$ ); 2) used the fitted model in China to estimate peak intensity at the corresponding administrative level 2 locations—that is, province level, in Italy (Spearman’s  $\rho = 0.57$ ; 95% bootstrap CI, 0.41–0.69;  $P < 0.01$ ); and 3) performed  $n$ -fold cross validation at the province level in Italy (Spearman’s  $\rho = 0.65$ ; 95% bootstrap CI, 0.52–0.76;  $P < 0.01$ ). These results suggest that the model is robust to both within- and between-country out-of-sample testing (Extended Data Fig. 6).

To evaluate the potential effect of the temporal clustering of cases on the peak attack rate and total attack rate, we performed a simple linear regression (Supplementary Table 2). For locations that have a single peak, the attack rate at the peak is highest in two settings: 1) in crowded locations with high population size (prefectures that also experience high total attack rates); and 2) in locations that have lower population and lower crowding and, therefore, high temporal clustering of cases (Extended Data Fig. 7). Other prefectures that have low population and low crowding sometimes experience very short outbreaks with a small peak attack rate, suggesting local stochastic extinction possibly due to limited mixing between populations. We hypothesize that the observation that high peak attack rates can sometimes be found in low crowding areas is related to rare super-spreading events as observed in Bergamo, Italy, or Mulhouse, France.